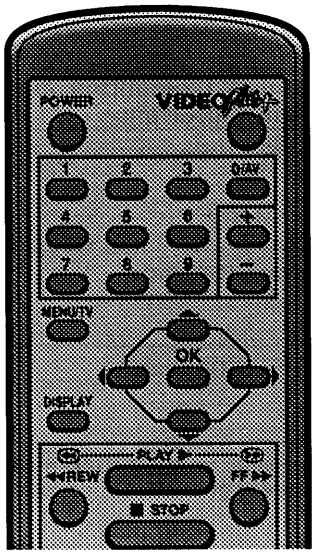
Service Manual

Video Cassette Recorder

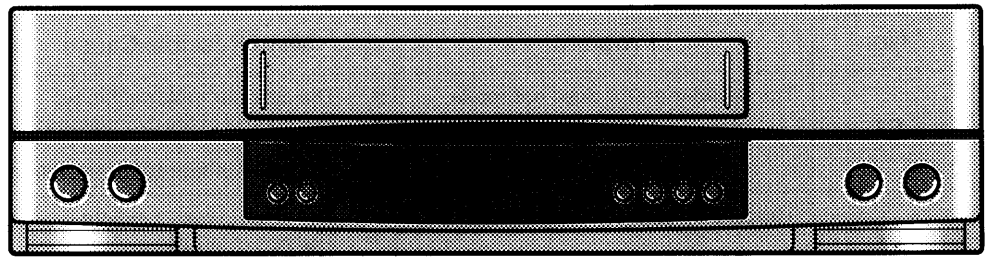
TEUKR Part No. TP30050

Part number for Mechanism
Service Information TP30036

VR202LV



RCV8528



VHS PAL

CONTENTS

SELF-DIAGNOSIS DISPLAY 2
1. DISASSEMBLY 3
2. ELECTRICAL ADJUSTMENT 6
3. TEST POINT FOR TAPE PATH ADJUSTMENT 13
4. PARTS LIST
   ACCESSORIES 14
   PACKING MATERIALS 14
   CABINET & CHASSIS PARTS 14
   MECHANISM PARTS 15
   ELECTRICAL PARTS 18
5. MECHANISM 25
CIRCUIT DIAGRAMS (Refer to the separate volume)

PRODUCT SAFETY NOTICE

The components designated by a symbol (⚠) in this schematic diagram designates components whose value are of special significance to product safety. Should any component designated by a symbol need to be replaced, use only the part designated in the Parts List. Do not deviate from the resistance, wattage and voltage ratings shown.

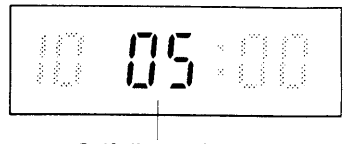
NOTE: 1. Parts order must contain model number, part number and description.
2. Substitute parts may be supplied as the service parts.
3. N.S.P.: Not available as service parts.

SELF-DIAGNOSIS DISPLAY

This unit displays the results of the self-diagnosis it carries out in two digits on the front panel indicator when problems occur. Although these digits will only roughly tell you what kind of problems have occurred, use them when servicing the unit.

1. Displaying the Self-Diagnosis Results

- Press the STOP button for about 10 seconds continuously. Two digits (see below) showing the results of the self-diagnosis will be displayed for three seconds at the hours part of the timer. All other parts of the timer will go off. The time will automatically return after the three seconds.
- If no mechanism unit problems have occurred up to now, "**00** " will be displayed.



Self-diagnosis digits

2. Self-Diagnosis Results

No.	Problem	Main Possible Cause	Mechanism Operations and State After Occurrence
01	The cylinder motor does not rotate.	• The cylinder motor is faulty. • The control of the cylinder motor is faulty. • The tape winds around the cylinder.	Shifts to the STOP mode.
02	The take-up reel does not rotate.	• The take-up reel is caught. • The belt is faulty. • The take-up torque has decreased.	Shifts to the STOP mode.
03	The capstan motor does not rotate.	• The capstan motor is faulty. • The control of the capstan motor is faulty.	Shifts to the STOP mode.
04	The tape cannot be loaded with the cassette inserted. (But unloading can be performed.)	• Error in the operations of the tape loading mechanism. • Foreign particles in the tape loading mechanism. • The tape end sensor is faulty. • The reel brake of the tape cassette has not been released.	Unloads, shifts to the INITIAL mode, and the power goes off.
05	Tape loading and unloading cannot be performed with the cassette inserted.	• The tape guide is caught. • The loading motor is faulty. • The control of the loading motor is faulty.	The power is forcibly turned off with the mechanism at its current position.
06	Front unloading cannot be performed when ejecting the cassette. (Front loading can be performed.)	• The cassette holder mechanism is faulty. • The front door is caught.	Front loads and shifts to the STOP or INITIAL mode. When the power switch is turned on before eject operations: Shifts to the STOP mode. When the power switch is turned off before eject operations: Shifts to the INITIAL mode and the power goes off.
07	Front loading and front unloading cannot be performed when ejecting the cassette.	• The tape cassette is caught in the cassette holder mechanism. • The gears of the front loading drive mechanism have not engaged properly.	The power is forcibly turned off with the mechanism at its current position.
08	The mechanism becomes 1 (BRAKE) while moving from 2 (STOP, FF/REW), 3(STILL), 4 (PLAY), and to 5 (IDLER).	• The mechanism position switch contact is faulty.	The power is forcibly turned off with the mechanism at its current position.
09	The mechanism becomes 7 (INITIAL) while moving from 1 (BRAKE), 2 (STOP, FF/REW), 3(STILL), 4 (PLAY), and to 5 (IDLER).	• The mechanism position switch contact is faulty.	Carries out tape take-up operations, shifts to the INITIAL mode, and the power goes off.

Note: For details of mechanism operations corresponding to the mechanism positions of the self-diagnosis numbers 08 and 09 above, refer to the separate volume on the mechanism manual. These manual reference numbers are ahown in the cover.

1. DISASSEMBLY

1-1. REMOVAL OF CABINET, MECHANISM UNIT AND MAIN BOARD

REMOVING THE CABINET PARTS (Fig. 1.1.1)

1. Remove the cabinet and bottom cover by removing the four screws (A) and five screws (B).
2. Remove the front panel by removing the locks of the clamps (C) using a screwdriver, etc. and slightly rotating the bottom part in the direction of the arrow.

Note: Electrical adjustments for the this model can be performed with only the cabinet removed.

REMOVING THE MECHANISM MAIN UNIT (Fig. 1.1.2)

After removing the cabinet parts:

1. Remove the two screws (D), and then remove the bracket.
2. Remove the 22-wire flat cable from the MC-2 PWB, the 8-wire flat cable from the VP-1 PWB assembly and the 6-pin connector from the ACE heads..
3. Remove the mechanism main unit by removing the two screws (E) and two screws (F).
   Remove, as well, the two screws (G) at the cassette tray side while pressing the tray lock lever as shown in the enlarged view and pushing the cassette tray to the position where the two screw (G) appear.

REMOVING THE CP-1 PWB ASSEMBLY (Fig. 1.1.3)

After removing the cabinet parts and mechanism unit:

1. Pull out the TM-1 PWB assembly while pressing and spreading out the four clamps (H) as shown by the arrows.
2. Remove the two red screws (J). Next, remove the CP-1 PWB assembly by lifting it straight up while pressing and spreading out the two clamps (K) as ahown by the arrows.

M-TK2/ETH-1

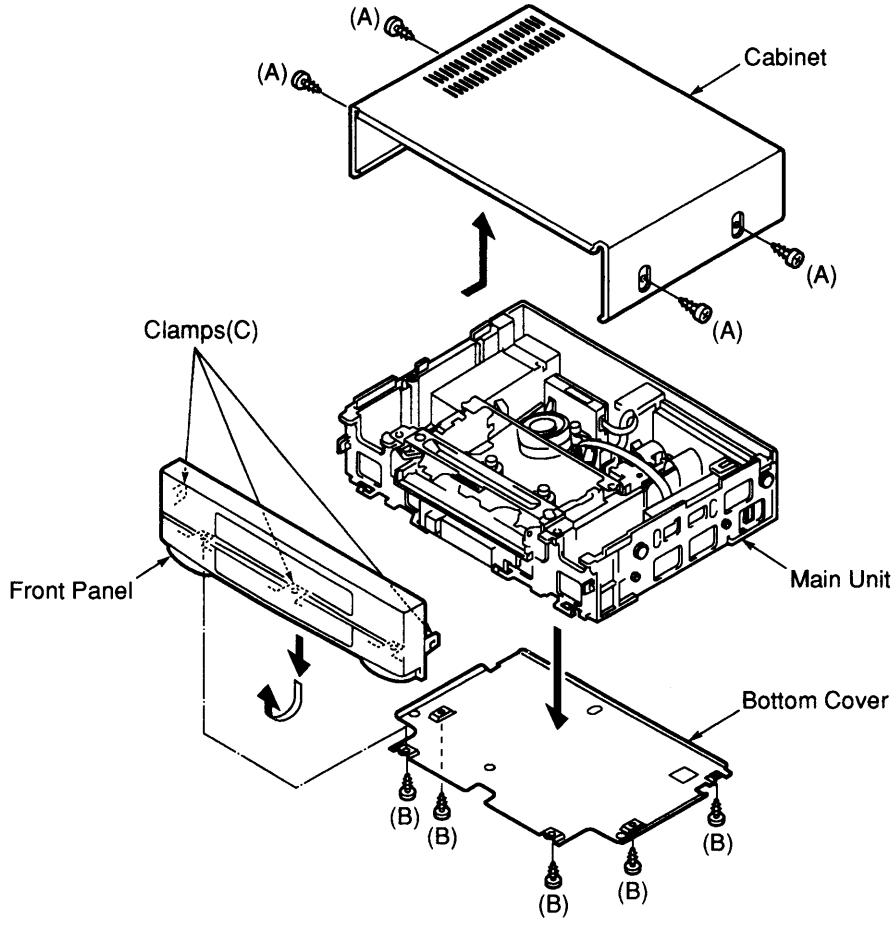


Fig. 1.1.1

M-TK2L/E-2

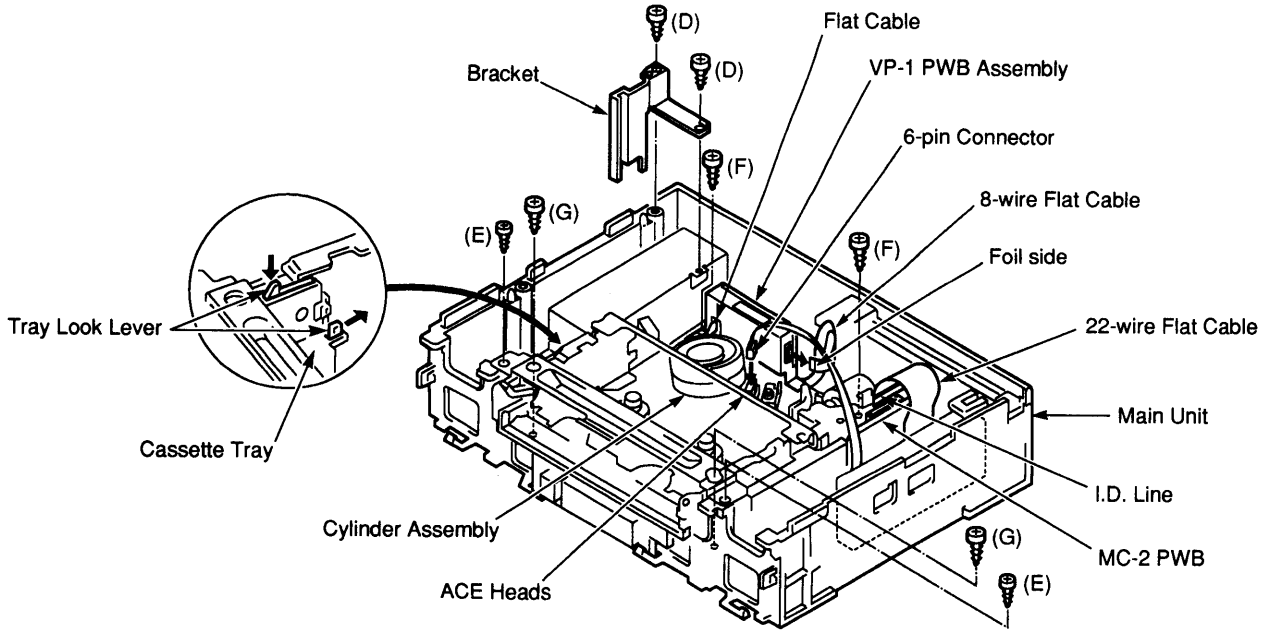


Fig. 1.1.2

M-TK2L/E-3

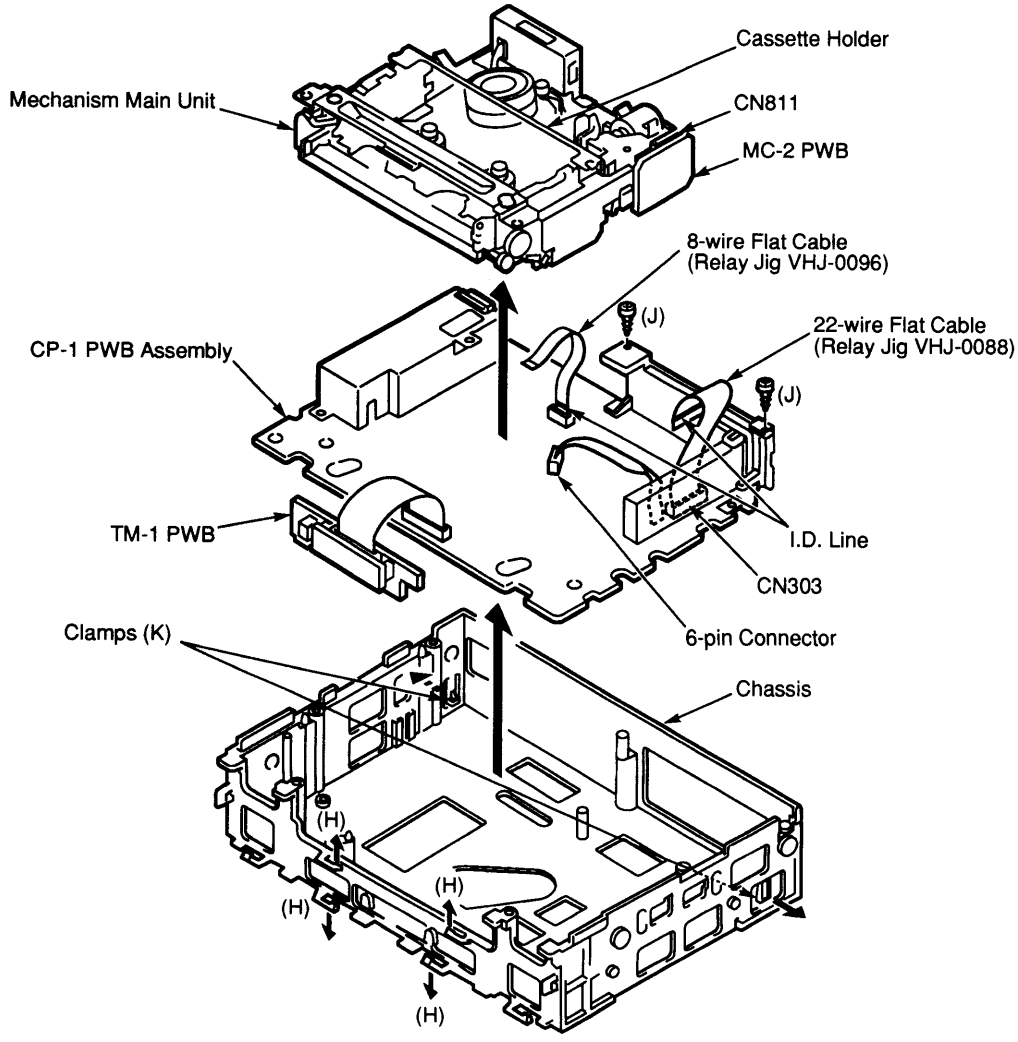


Fig. 1.1.3

TEMPORARILY SETTING UP AND CONNECTING MAIN PWB ASSEMBLY

The following is an example of how to place and connect the main PWB not requiring a jig, when repairing the CP-1 PWB assembly (Fig. 1.1.4)

1. Place the mechanism main unit at the fixed position on the chassis.
2. Connect the 29-wire flat cable to the MC-2 PWB , and the 8-wire flat cable to the VP-1 PWB assembly.
3. Place the CP-1 PWB assembly above the mechanism main unit along the cassette holder. Insert the tip (L) of the terminal board into the opening (M) at the side of the chassis, as shown in the enlarge view.

M-TK2L/E-4

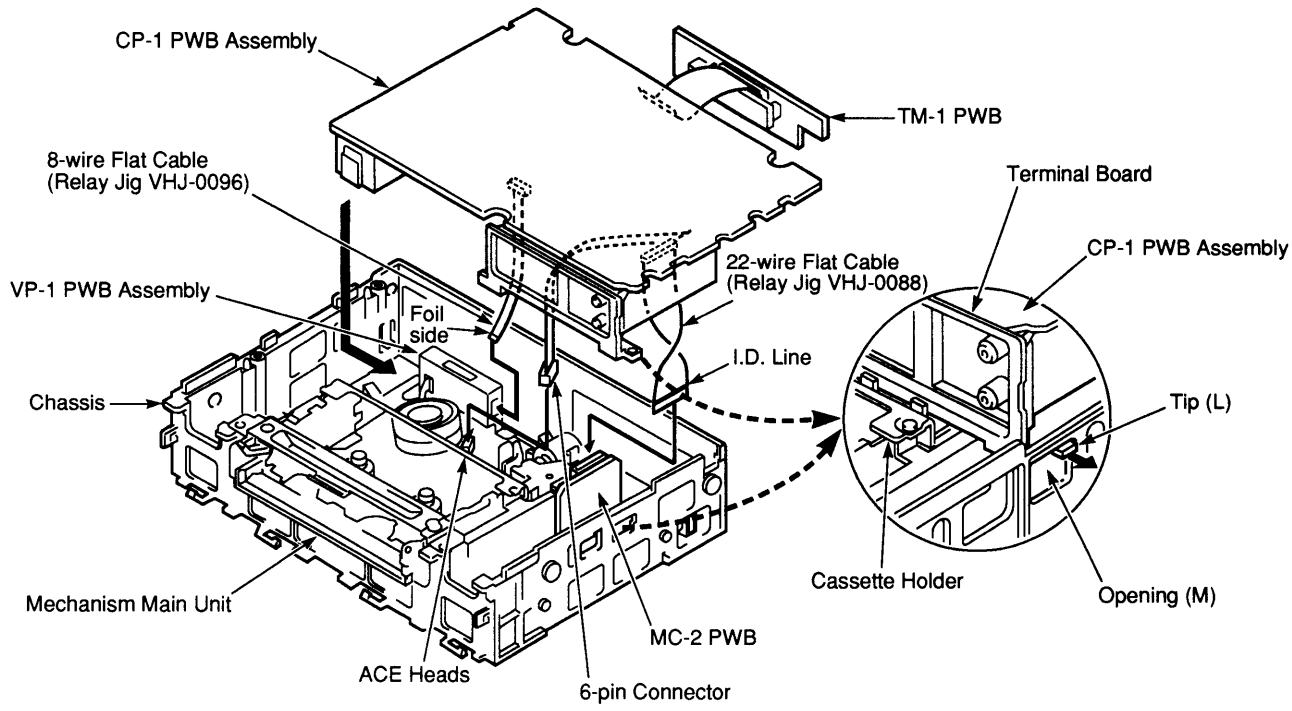


Fig. 1.1.4

1-2. MAIN CIRCUIT BOARD

L-TK2L/E-TH

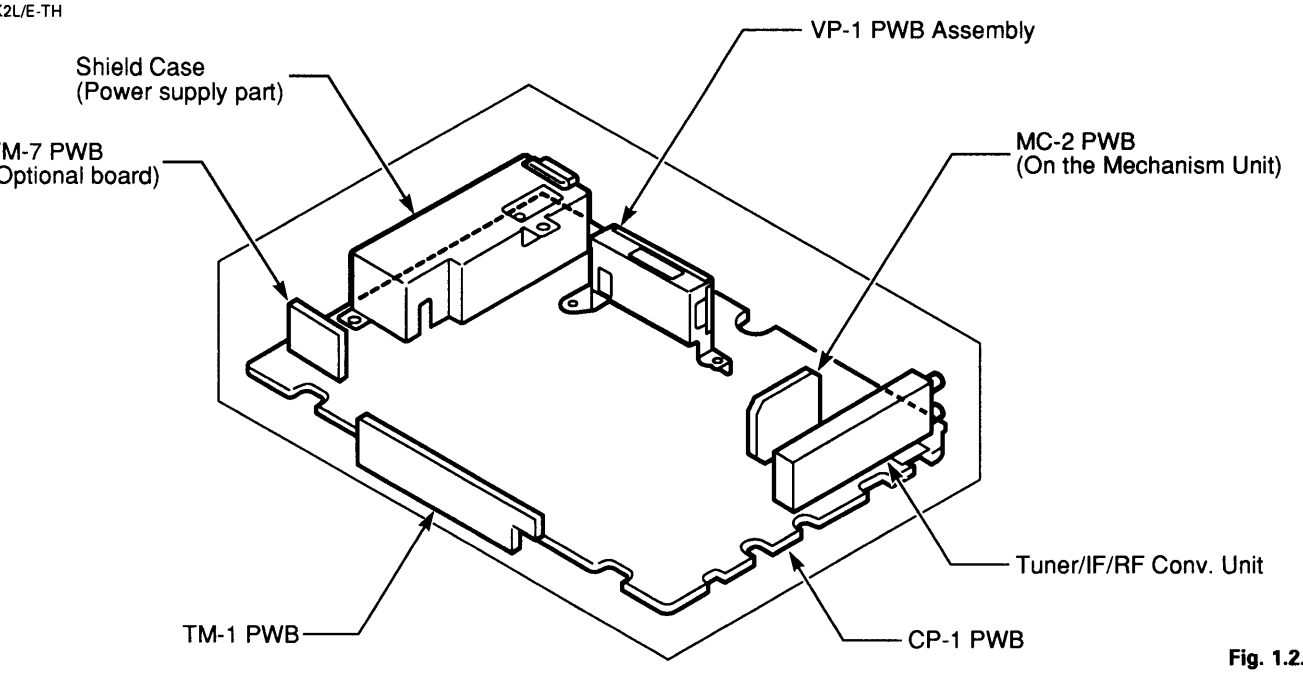


Fig. 1.2.1

2. ELECTRICAL ADJUSTMENT

PREPARATION

This VCR need 3 basic presetting by using the menus displayed on-screen.
After all connection have been made, then follow steps 1 to 3 to preset the VCR.
The 3 presetting steps will be displayed in sequence on TV screen. The setting are entered with the remote control.

Turn on the VCR

1. Adjusting the TV receiver to the video channel: The WELCOME screen will appear. When the video channel has been preset, press the OK button on the remote control.
2. Language selection: Select the desired language, then press the OK button.
3. Tuning control adjustments: When the channel position has been preset, press the MENU/TV button.
   When steps 1 to 3 have been finish, ready to operate the all operating mode.

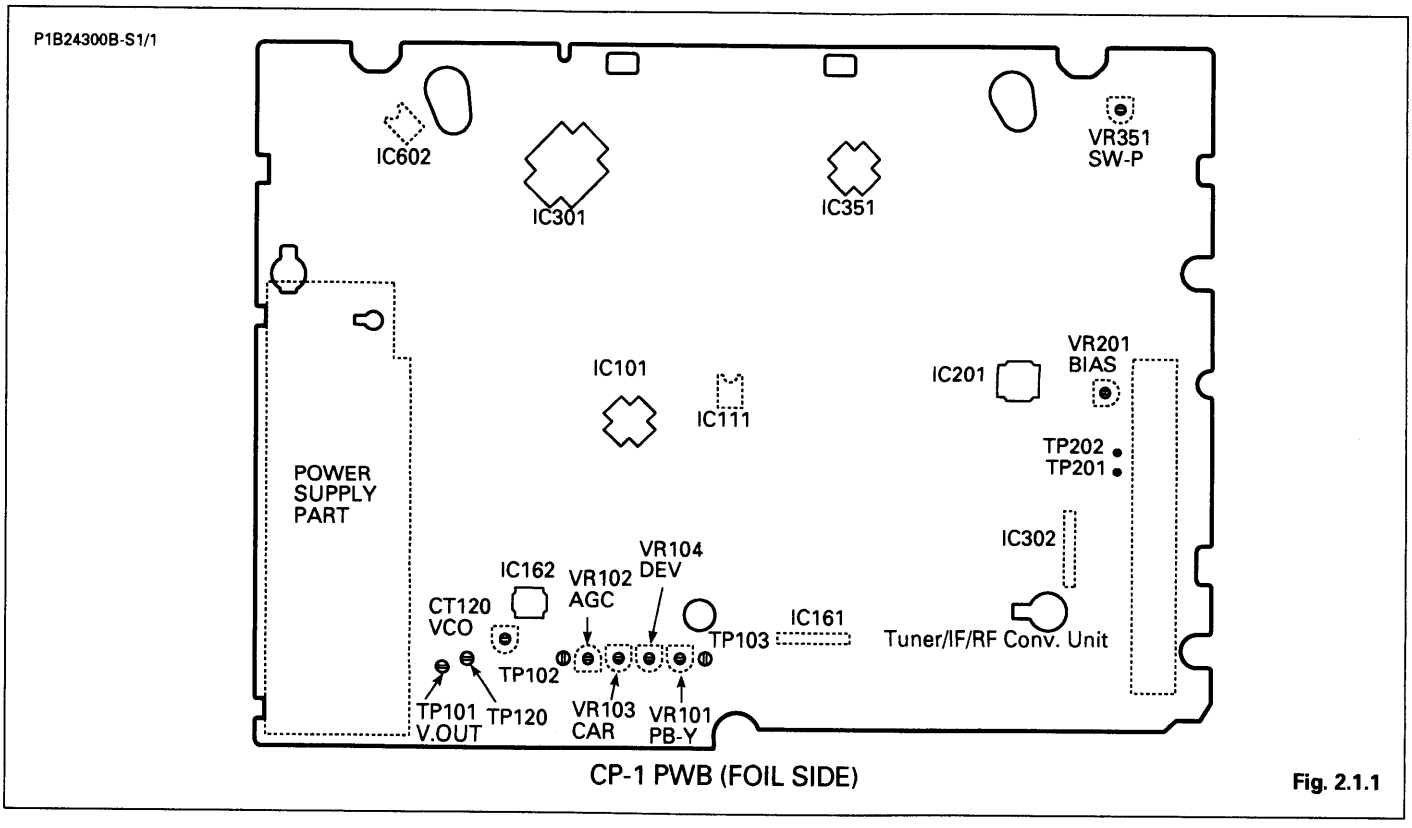
2-1. SERVO CIRCUIT ADJUSTMENT

- These adjustments should be carried out upon completion of the tape transport adjustments.
- If the tape transport adjustments (except the tilt adjustment) are carried out after these adjustments, follow the procedures again in Section 2-1-3. SWITCHING POSITION ADJ.
- When a cassette tape is loaded, auto-tracking will be set immediately after starting the first playback. As this will deviate the tracking center set, be sure to press the channel buttons (+) or (–) once directly after starting playback to prevent auto-tracking from being set.

2-1-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Oscilloscope	Vertical sensitivity: 5 mV/DIV, external trigger Band width: more than 10 MHz
Alignment Tape	VHJ-0009 or VHJ-0023: SP mode, monoscope, 6 KHz
Blank Tape	VHS-type cassette tape
Monitor TV	

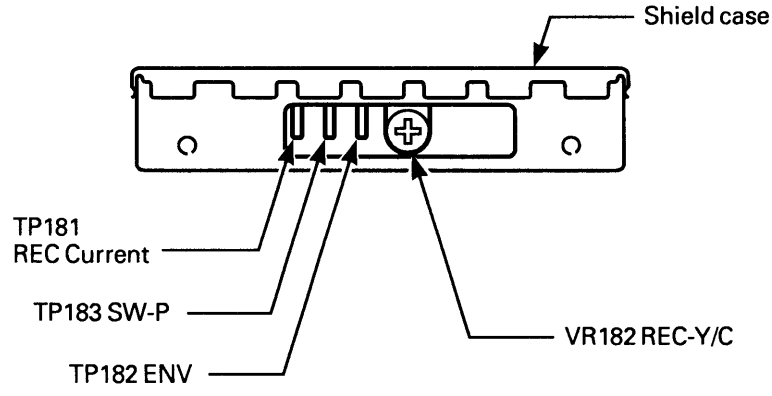
2-1-2. LOCATION OF ADJUSTMENT POINTS



CP-1 PWB (FOIL SIDE)

Fig. 2.1.1

P1B08800C-S1



VP-1 PWB Assembly

Fig. 2.1.2

Note:

- Self-recording means "Record any broadcasting or video signal and play back the just-recorded portion".

2-1-3. SWITCHING POSITION ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP101 (VIDEO OUT) TP183 (SW-P)	Oscilloscope	PLAY mode Alignment tape (VHJ-0009 or VHJ-0023)

ADJ. Location	ADJ. Value
VR351 (SW-P)	6.5 H ± 0.5 H

1. Set the tracking control position to the center by pressing CHANNEL buttons (+) and (–) simultaneously. (Tracking center position display in the indicator panel "T –:– ")
2. Adjust VR351 (SW-P) so that the width "T" becomes **6.5 H ± 0.5 H** as shown in Fig. 2.1.3.

WS-SWP

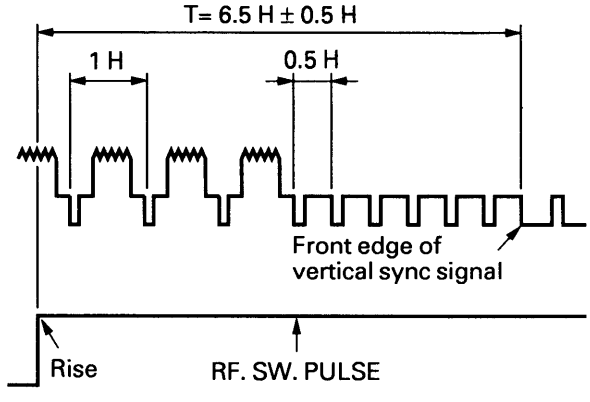


Fig. 2.1.3

2-1-4. STILL V-LOCK ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
Picture of monitor TV	Color bar generator or Broadcasting Monitor	Self-recording (SP mode) STILL mode Blank tape
		Self-recording (LP mode) STILL mode Blank tape

ADJ. Location	ADJ. Value
CHANNEL (+) button CHANNEL (–) button	The minimum vertical shake

1. Play back the just-recorded portion and then set the VCR in the STILL mode.
2. Press the CHANNEL (+) button or the CHANNEL (–) button so that any vertical shake of the picture is brought to its minimum.

2-2. VIDEO CIRCUIT ADJUSTMENT

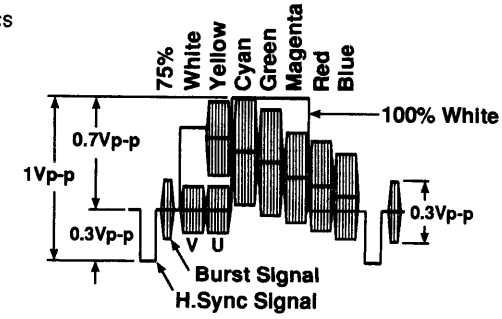
- Before making the following adjustments, Section 2-1. SERVO CIRCUIT ADJUSTMENT should be completed.
- Use the relay jig to provide simple adjustment of the VP-1 PWB assembly.

2-2-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Color Bar Signal Generator	PAL Color bar signel with 100% white level (EBU color bar signel)
Oscilloscope	Vertical sensitivity: 5 mV/DIV, external trigger Band width: more than 10 MHz
Digital Voltmeter	DC range
Alignment Tape	VHJ-0008 or VHJ-0023: SP mode, color bar, 1kHz (Color bar signal waveform is described below. Refer to Fig. 2.2.1)
Blank Tape	VHS-type cassette tape
Oscilloscope Probe	Input capacity: less than 25 pF (10:1) less than 40 pF (1:1) Covering frequency: DC ~ 40 MHz (10:1) DC ~ 30 MHz (1:1)
Frequency Counter	8 significant digits
Adjustment Relay Jig	VHJ-0065: 5-wire flat cable for VP-1 PWB Assembly

ALIGNMENT TAPE COLOR BAR SIGNAL

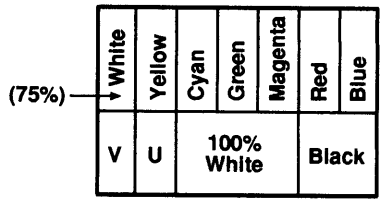
WPV-TCS



COLOR BAR SIGNAL WAVEFORM (VHJ-0008)

Fig. 2.2.1

WPV-TCP



COLOR BAR PATTERN (VHJ-0008) ON MONITOR TV

Fig. 2.2.2

2-2-2. ADJUSTMENT RELAY JIG

Connect the flat cable end from the cylinder assembly to the VP-1 PWB assembly using the relay jig to provide simple repairing and adjustment of the VP-1 PWB assembly, as shown in Fig. 2.2.3. Further, when adjusting the VP-1 PWB assembly, be sure to make contact an end of shield case with bracket of the VP-1 PWB assembly to maintain the shield effect. If the VP-1 PWB assembly does not contact, there is insufficient ground and no proper play back image can be obtained.

WPV-TK2L/E

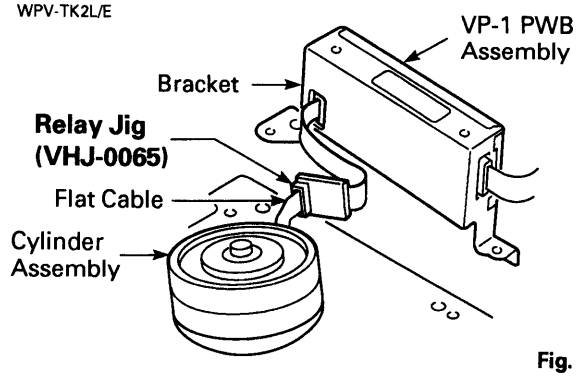
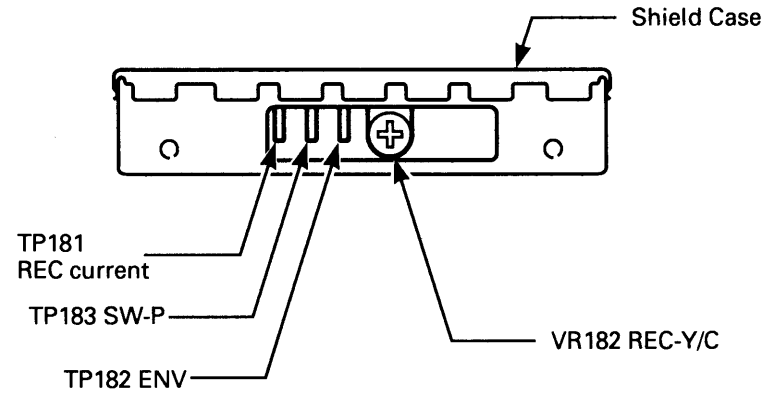


Fig. 2.2.3

2-2-3. LOCATION OF ADJUSTMENT POINTS

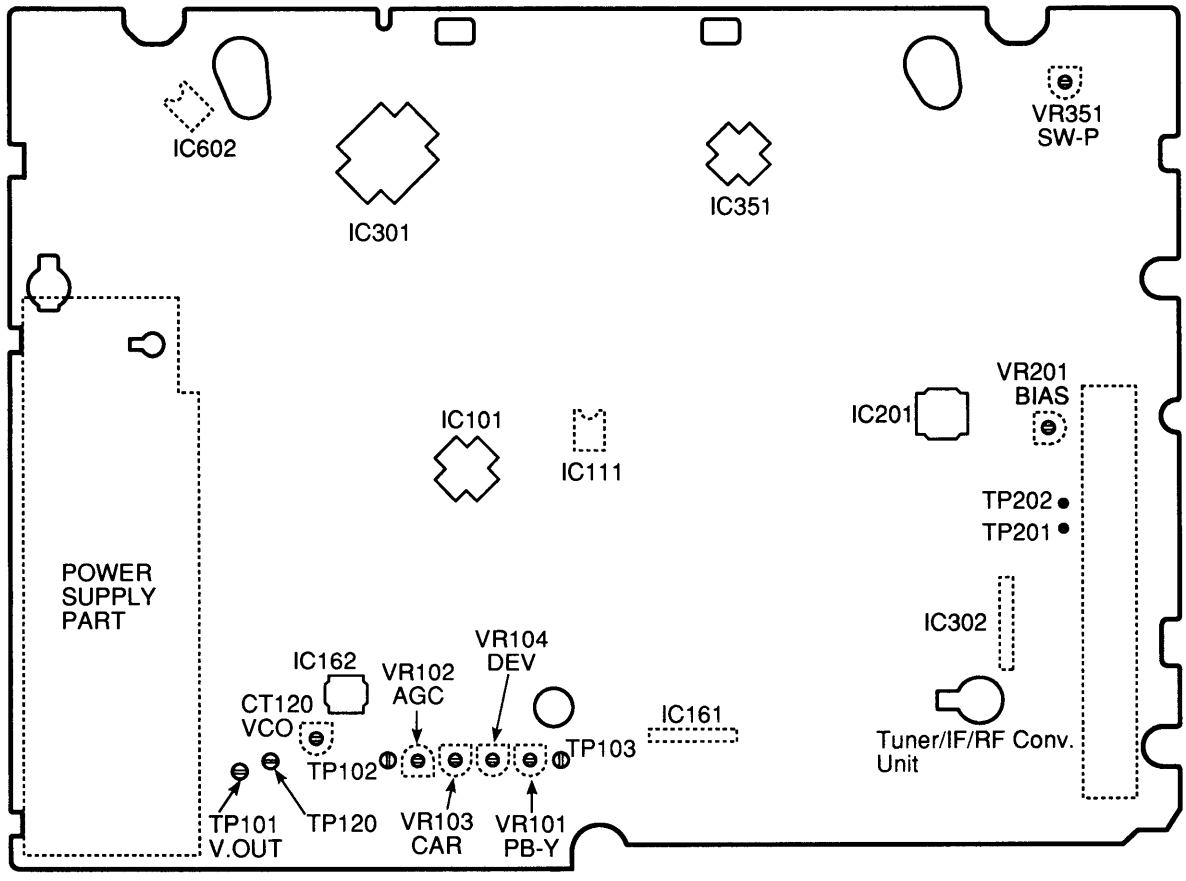
P1B08800C-V1



VP-1 PWB Assembly

Fig. 2.2.4

P1B24300B-V1/1



CP-1 PWB (FOIL SIDE)

Fig. 2.2.5

Notes:

- Self-recording means "Record the video signal and play back the just-recorded portion".
- Connect the monitor TV to the VIDEO OUTPUT terminal, before making following adjustments.

2-2-4. AGC LEVEL ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP102	Color bar generator Oscilloscope (10:1 probe)	E-E mode

ADJ. Location	ADJ. Value
VR102 (AGC)	0.5 Vp-p ± 0.025 Vp-p

1. Connect the color bar generator to the VIDEO INPUT terminal.
2. Adjust VR102 (AGC) for **0.5 Vp-p ± 0.025 Vp-p** as shown in Fig. 2.2.6.

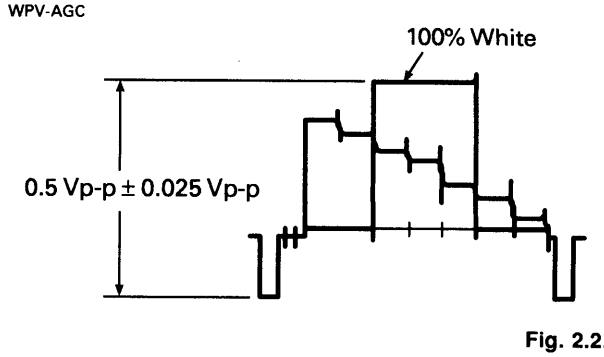


Fig. 2.2.6

2-2-5. PB-Y LEVEL ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP101	Oscilloscope (10:1 probe)	PLAY (SP) mode Alignment tape (VHJ-0008 or VHJ-0023)

ADJ. Location	ADJ. Value
VR101 (PB-Y)	1 Vp-p ± 0.05 Vp-p

1. Terminate the VIDEO OUTPUT terminal with a 75Ω resistor.
2. Adjust VR101 (PB-Y) for the video luminance signal level of **1 Vp-p ± 0.05 Vp-p.** (Refer to Fig. 2.2.7)

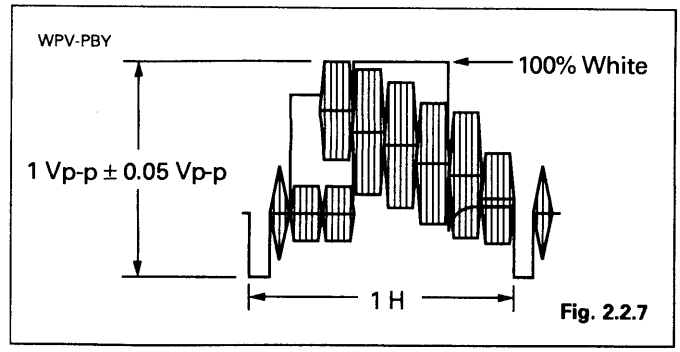


Fig. 2.2.7

2-2-6. CARRIER SET ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP103	Color bar generator Frequency counter	REC (SP) mode

ADJ. Location	ADJ. Value
VR103 (CAR)	3.83 MHz ± 0.05 MHz

1. Connect the color bar generator to the VIDEO INPUT terminal.
2. After removing the first color bar signal input from the video input terminal, immediately adjust VR103 (CAR) so that the frequency becomes **3.83MHz ± 0.05 MHz.**

2-2-7. DEVIATION ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP101	Color bar generator Oscilloscope (10:1 probe)	Self-recording (SP) mode Blank tape

ADJ. Location	ADJ. Value
VR104 (DEV)	1 Vp-p ± 0.05Vp-p

1. Record the color bar signal on the blank tape.
2. Play back of the just-recorded portion.
3. Adjust VR104 (DEV) for **1 Vp-p ± 0.05 Vp-p** as shown in Fig. 2.2.8.
4. If the adjustment value is not satisfactory, adjust VR104 (DEV) and repeat steps 2 to 3.

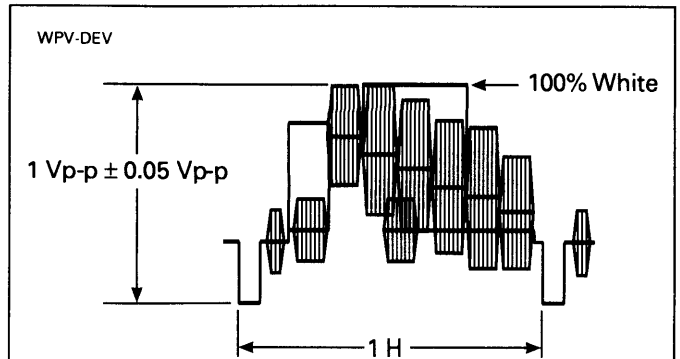


Fig. 2.2.8

2-2-8. Y/C REC CURRENT ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP181 (on VP-1 PWB)	Color bar generator Oscilloscope (1:1 probe)	REC(SP)mode Blank tape

ADJ. Location	ADJ. Value
VR182 (REC-Y)	550 mVp-p ± 20 mVp-p

1. Connect the ground of the oscilloscope to the shield case of the VP-1 PWB assembly.
2. Adjust VR182 (REC-Y) so that the video luminance signal level at the sync tip is **550 mVp-p ± 20 mVp-p**. (Refer to Fig. 2.2.9)

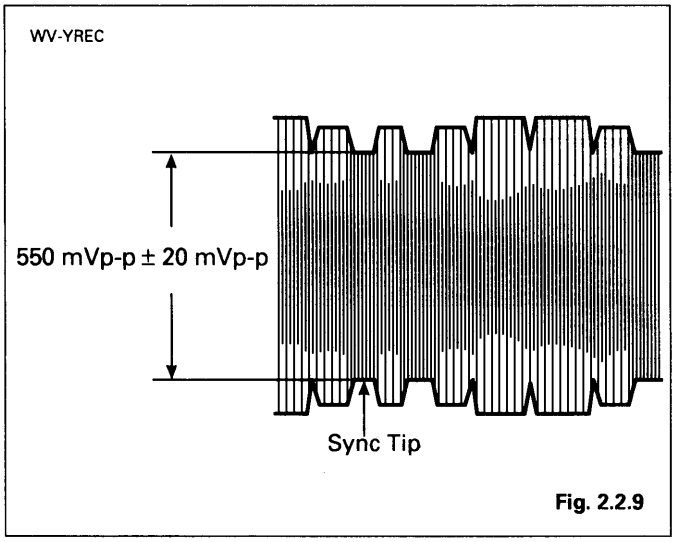


Fig. 2.2.9

2-2-9. VCO (on screen assist) ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP120	Color bar generator Digital voltmeter	E-E mode

ADJ. Location	ADJ. Value
CT120 (VCO)	2.5 V ± 0.3 V

1. Connect the digital voltmeter (DC range) to TP120 and GND.
2. Adjust CT120 (VCO) so that the voltage is **2.5 V ± 0.3 V.**

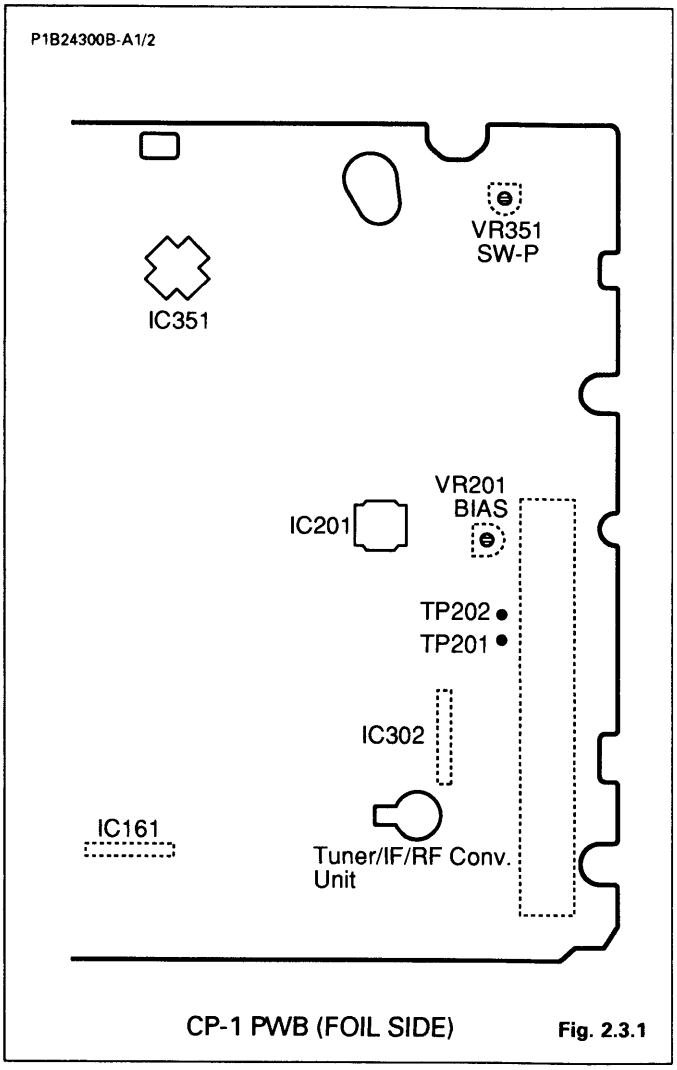
2-3. AUDIO CIRCUIT ADJUSTMENT

- Before making these adjustments, (especially, the tape guide height and audio control erase head height adjustments) should be carried out, so that the tape traveling between the loading guide pole and the audio control erase head runs without fluttering, twisting, curling.
- Before making these adjustments, Section 2-1. SERVO and Section 2-2. VIDEO circuit adjustments should be carried out.

2-3-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Oscilloscope	Vertical sensitivity : 10 mV/DIV Band width : more than 30 MHz
AC Voltmeter	Effective value indication Input frequency : 10 Hz ~ 20 kHz Input Impedance : more than 1 MΩ Measurement level : 1 mV (full scale)
Blank Tape	VHS-type cassette tape

2-3-2. LOCATION OF ADJUSTMENT POINTS



CP-1 PWB (FOIL SIDE) **Fig. 2.3.1**

2-3-3. BIAS LEVEL ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP201 (HOT) TP202 (GND)	Oscilloscope AC voltmeter	REC mode Blank tape

ADJ. Location	ADJ. Value
VR201 (BIAS)	26 mVrms

1. Load the VCR with a blank tape and select the record mode without all incoming signal.
2. After confirming on the oscilloscope that a 70 kHz ± 5 kHz sine wave is being output, adjust VR201 (BIAS) so that the AC voltmeter's reading is **26 mVrms**.

2-4. TUNER AND IF CIRCUITS ADJUSTMENT

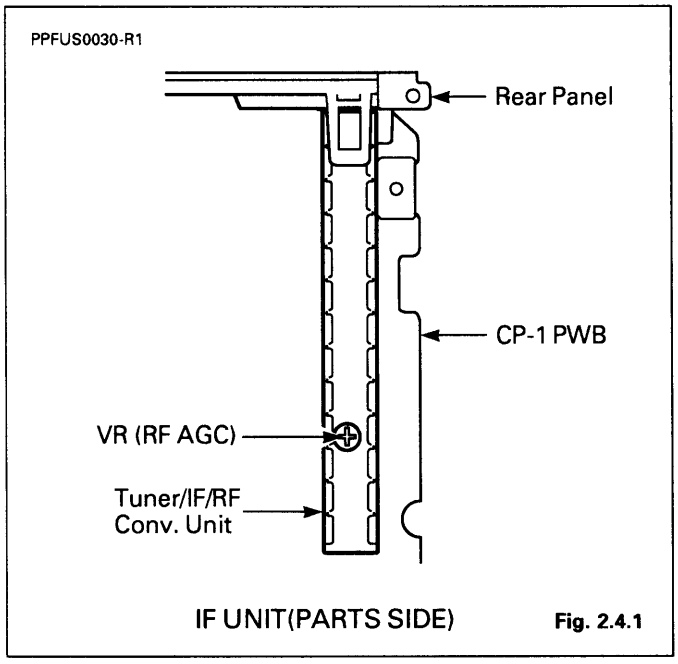
- When any malfunction occurs in the TUNER circuit the whole unit must be replaced.
- An adjustment of the IF circuit is shown as follows.

Note: The TUNER unit does not need any adjustments, because precise adjustments have been performed before shipment.

2-4-1. TEST EQUIPMENT AND STANDARD REQUIRED

Monitor TV	

2-4-2. LOCATION OF ADJUSTMENT POINT



IF UNIT(PARTS SIDE) **Fig. 2.4.1**

2-4-3. RF AGC ADJ.

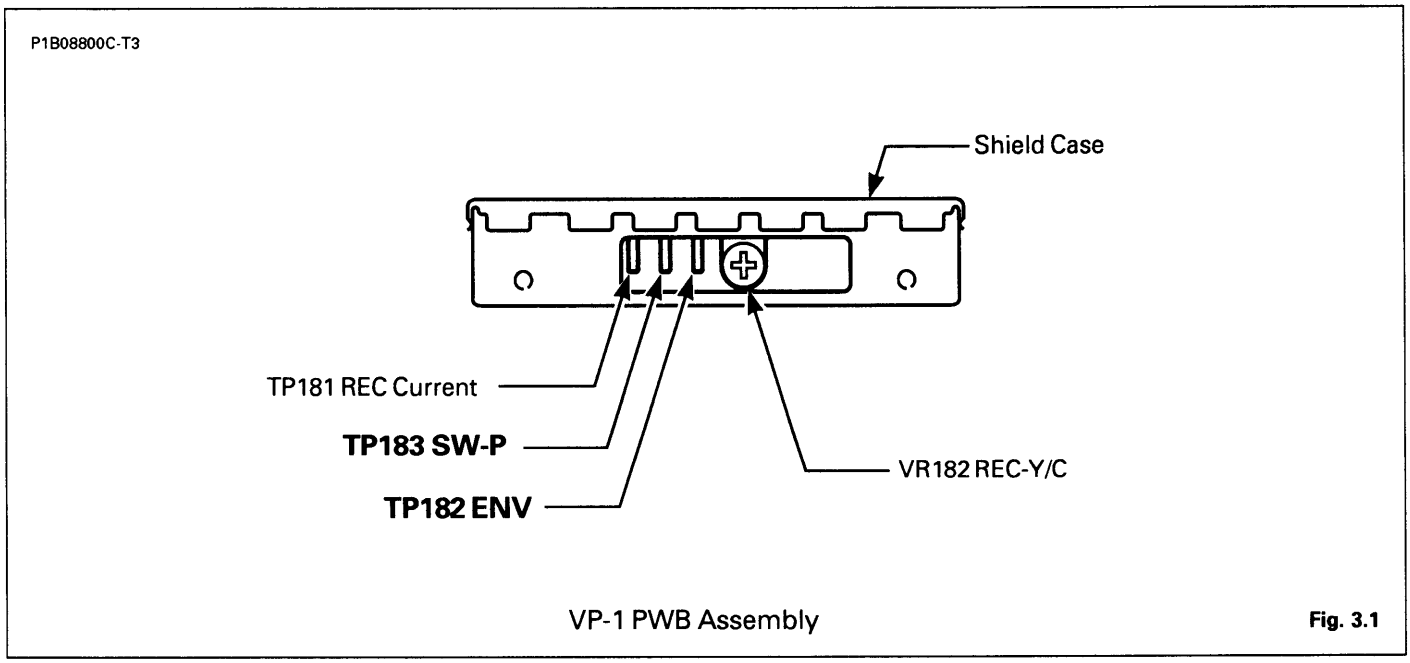
Measuring Point	Measuring Equipment	ADJ. Condition
Picture of monitor TV	Monitor TV	E-E mode

ADJ. Location	ADJ. Value
VR (RF AGC) (on the IF circuit)	S/N is best point

1. Connect the monitor TV to UHF ANTENNA OUTPUT terminal.
2. Connect the UHF antenna to UHF ANTENNA INPUT terminal.
3. Receive the middle electrical field (70 dBμ ~ 90 dBμ) of the UHF channel, and slowly turn VR (RF AGC) from the point where snow-noise is present to the point where it just disappears from the monitor TV.
4. Confirm by monitor TV that there is no beat and saturation (S/N is best point) when receiving any TV channel.

3. TEST POINT FOR TAPE PATH ADJUSTMENT

Test point TP182 (ENV) and TP183 (SW-P) for tape path adjustment is shown in Figure below.
For adjustment, refer to the Mechanism Service Information TP30036.



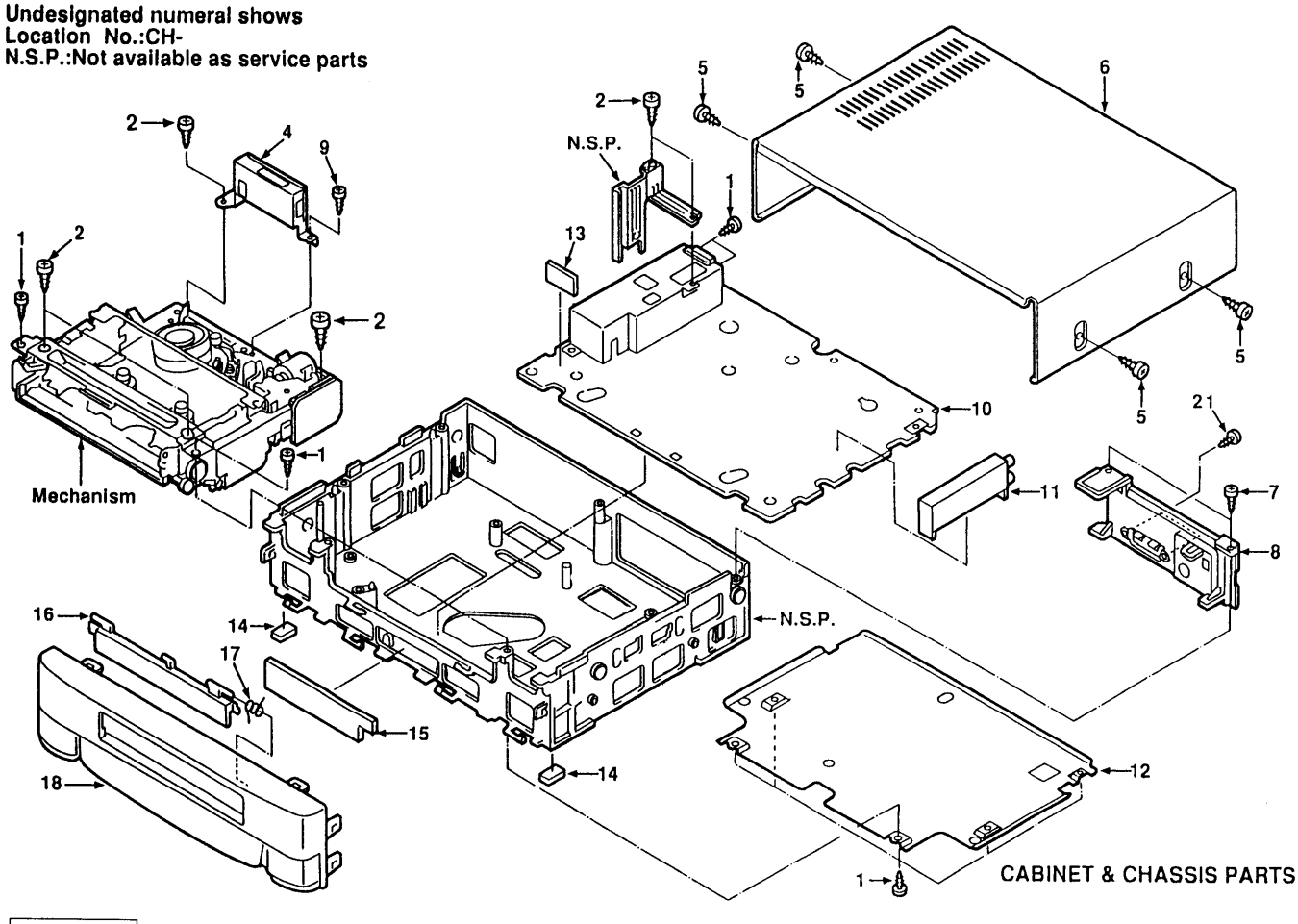
VP-1 PWB Assembly **Fig. 3.1**

4. PARTS LIST

LOCATION	PARTS NO.	DESCRIPTION
ACCESSORIES		
	645 004 9040	REMOCON(WITH COVER BATTERY)
	613 150 5124	COVER BATTERY(FOR REMOCON)
	613 155 2517	INSTRUCTION MANUAL
	613 132 6132	CABLE,ANT
OR	613 132 5975	CORD
⚠	613 136 6411	CORD,POWER
OR ⚠	613 140 7473	CORD,POWER
**********		
PACKING MATERIALS		
	613 155 2432	CARTON CASE
	613 150 2291	CUSHION,FRONT
	613 150 2307	CUSHION,BACK
	613 099 1768	POLYE COVER,INNER-K

LOCATION	PARTS NO.	DESCRIPTION
**********		
CABINET & CHASSIS PARTS		
CH-1	411 137 0007	SCR L-TPG BIN 3X10
CH-2	411 021 7907	SCR S-TPG BIN 4X12
CH-4	613 154 2754	COMPL PWB,VP-1
CH-5	412 028 9406	SPECIAL SCREW
CH-6	613 147 9661	COMPL,COVER TOP
CH-7	411 021 3800	SCR S-TPG BIN 3X10
CH-8	613 153 7866	TERMINAL
CH-9	411 001 1901	SCR S-TPG BIN 3X6
CH-10	613 155 3798	COMPL PWB,CP-1-A
CH-11	645 001 0484	TUNER,RF/TU/IF
CH-12	613 139 2182	COVER BOTTOM
CH-13	613 154 4925	COMPL PWB,TM-7(OPTION BOARD)
CH-14	613 121 1001	STAND,FELT,FRONT
CH-15	613 153 2465	COMPL PWB,TM-1
CH-16	613 155 2289	DOOR CASSETTE
CH-17	613 140 7459	SPRING
CH-18	613 158 1845	ASSY,CABINET FRONT
CH-21	411 021 6405	SCR S-TPG BIN 3X8

Undesignated numeral shows Location No.:CH-
N.S.P.:Not available as service parts

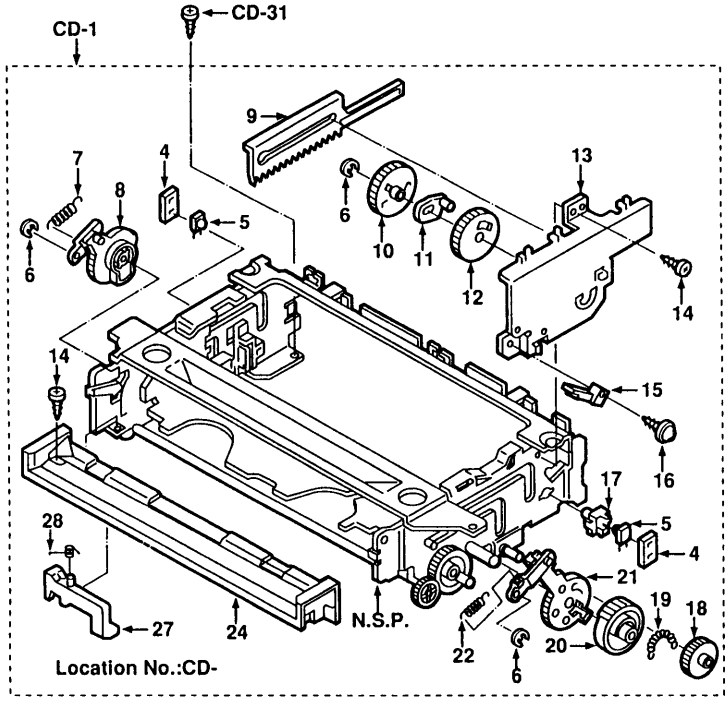


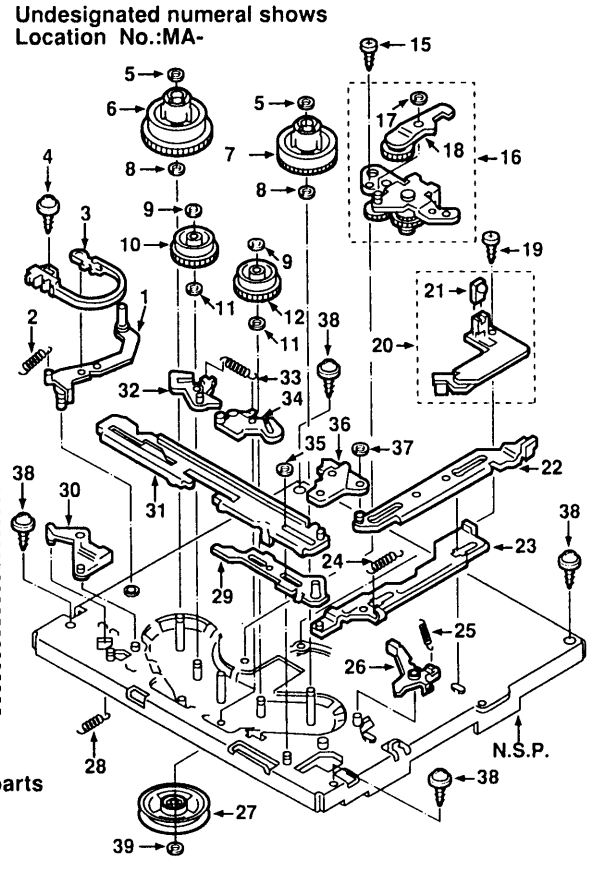
CH-TK2L/ETH

MECHANISM PARTS

CB602700
MB0046##

LOCATION	PARTS NO.	DESCRIPTION
MECHANISM PARTS 1		
CD-1	613 142 9581	COMPL,CASSETTE MECHANISM
CD-4	613 022 0585	LID
CD-5	407 098 3201	PHOTO COUPLE PN150SAN
CD-6	411 015 9801	RING E 2.3
CD-7	613 022 1643	SPRING,LINK L
CD-8	613 022 0073	ASSY,GEAR,LEVER L
CD-9	613 022 2695	RACK
CD-10	613 141 6109	GEAR,LOCK
CD-11	613 139 8962	ASSY,LEVER,PINION
CD-12	613 022 2626	GEAR,PINION
CD-13	613 021 9657	ASSY,BRACKET,GEAR
CD-14	411 027 1305	SCR S-TPG BIN 2.6X4
CD-15	613 095 0949	SW,SPECIAL
CD-16	411 106 9208	SCR PAN+SW+W 2X9
CD-17	613 022 0943	HOLDER,TRANSISTOR
CD-18	613 022 2619	GEAR,IDLER
CD-19	613 022 1667	SPRING,GEAR MAIN
CD-20	613 022 2596	GEAR,MAIN
CD-21	613 022 0097	ASSY,GEAR,LEVER R
CD-22	613 022 1674	SPRING,LINK R
CD-24	613 022 4064	BOARD,UNDER
CD-27	613 124 5006	LEVER,SAFETY SW
CD-28	613 125 6149	SPRING,SAFETY SW
CD-31	411 001 8702	SCR BIN 3X6
MA-1	613 100 0391	ASSY,LEVER,TENSION
MA-2	613 085 7996	SPRING,LEVER TENSION
MA-3	613 021 9701	ASSY,HOLDER,BAND
MA-4	411 144 2803	SCR PAN+SW+W 2.6X6
MA-5	411 109 1605	WASHER Y 2.6X6X0.25
MA-6	613 135 7068	ASSY,REEL,SUPPLY
OR	613 135 7549	ASSY,REEL,SUPPLY
MA-7	613 135 7075	ASSY,REEL,TAKE UP
OR	613 143 2963	ASSY,REEL,TAKE UP
MA-8	412 021 5306	SPECIAL WASHER 3.1X6X0.3
OR	412 015 8900	SPECIAL WASHER 3.1X6X0.4
OR	412 015 8504	SPECIAL WASHER 3.1X6X0.5
MA-9	411 109 1506	WASHER Y 2.1X6X0.25
OR	411 109 1407	WASHER Y 2.1X5X0.25
MA-10	613 135 7150	GEAR,REEL SUPPLY
OR	613 142 9116	GEAR,REEL SUPPLY
MA-11	412 026 7305	SPECIAL WASHER 2.6X6X0.25
MA-12	613 135 7167	GEAR,REEL TAKE UP
OR	613 142 9109	GEAR,REEL TAKE UP
MA-15	412 042 4302	SPECIAL SCREW 2.6X4
MA-16	613 135 7099	COMPL,IDLER,CLUTCH
MA-17	411 120 1301	WASHER Y 2.1X4X0.25
MA-18	613 135 7082	ASSY,IDLER
MA-19	411 021 3107	SCR S-TPG BIN 2.6X8
MA-20	613 120 9053	COMPL PCB,MC-4
MA-21	407 016 7205	LED LN59
MA-22	613 021 9985	ASSY,SLIDE,ACT PLATE
MA-23	613 142 9086	SLIDE,C BRAKE
MA-24	613 022 1612	SPRING,RETURN SLIDE
MA-25	613 022 1506	SPRING,SUB T
MA-26	613 098 0106	ASSY,BRAKE SUB T
MA-27	613 077 3647	PULLEY,REEL
MA-28	613 022 1490	SPRING,SUB SUPPLY
MA-29	613 022 2374	SLIDE,ACT BRAKE
MA-30	613 084 8871	BRAKE,SUB SUPPLY
MA-31	613 022 0004	ASSY,SLIDE,M PLATE
MA-32	613 080 9216	ASSY,BRAKE,SUPPLY
MA-33	613 086 2914	SPRING,MAIN BRAKE
MA-34	613 080 9209	ASSY,BRAKE,TAKE UP
MA-35	411 109 3005	WASHER Y 2.6X5X0.5
MA-36	613 022 2015	LEVER,CONT PLATE
MA-37	412 015 9501	SPECIAL WASHER
MA-38	411 021 7907	SCR S-TPG BIN 4X12
MA-39	412 045 4606	SPECIAL WASHER 2.4X6X0.25





N.S.P.:Not available as service parts

92EP1/MA-1

MECHANISM PARTS 2

LOCATION	PARTS NO.	DESCRIPTION
DR-1	613 137 5789	COMPL,CYLINDER,2N2P-L
DR-2	411 038 1608	SCR PAN+W 3X8
DR-3	613 078 8689	ASSY,CYLINDER,UPR 2N2P-L
DR-4	613 113 1354	ASSY,CYLINDER,LWR 2AL
DR-5	613 097 2170	SPACER,MOTOR 0.3T
DR-6	613 088 9072	BASE,CYLINDER
DR-7	411 047 7509	SCR PAN+FLG 3X6
DR-8	411 047 5000	SCR PAN+FLG 2.6X8
DR-9	613 085 7279	STATOR,MOTOR CYLINDER
OR	613 132 3520	STATOR,MOTOR CYLINDER
DR-10	411 044 8301	SCR PAN+SW 2.3X10
OR	411 044 9209	SCR PAN+SW 2.3X8
DR-11	613 022 4019	ROTOR,MOTOR CYLINDER
DR-12	411 044 9001	SCR PAN+SW 2.3X6
MB-1	613 123 4802	SLEEVE
MB-2	613 053 3227	SPECIAL WASHER
MB-3	613 123 4970	TAPE GUIDE
MB-4	411 004 5302	NUT HEX (3)
MB-5	613 123 9418	CAP
MB-6	613 152 8079	SLIDE,ACT PINCH
MB-7	613 021 9800	ASSY,LEVER,CAM PINCH
MB-8	411 109 2008	WASHER Y 3.1X8X0.5
MB-9	613 022 1797	SPRING,ACE HEAD
MB-10	613 144 5741	COMPL,BRACKET,HEAD
MB-11	613 110 1692	SLEEVE,ACE HEAD
MB-12	412 015 8207	SPECIAL NUT (M5)
MB-13	411 120 0007	SCR PAN+SW+W 2.6X5
MB-14	613 120 3631	BRACKET,STOPPER
MB-15	613 022 1582	SPRING,SLIDE BRAKE
MB-16	613 094 9240	COMPL,SLIDE,CAM
MB-17	613 022 1575	SPRING,LINK LOCK
MB-18	613 022 2725	DAMPER
MB-19	613 022 2534	GEAR,FRONT LOAD
MB-20	613 094 1206	ASSY,LEVER,FRONT
MB-21	613 134 2910	GEAR,HELICAL FRONT
MB-22	411 046 8002	SCR PAN+SW+W 2.6X6
MB-23	411 023 2801	SCR S-TPG PAN 2.6X6
MB-24	411 023 3303	SCR S-TPG PAN 2.6X8
OR	411 021 3107	SCR S-TPG BIN 2.6X8
MB-28	613 077 3227	HOLDER,WORM
MB-29	613 027 0382	WASHER
MB-30	613 078 8320	ASSY,WORM,FRONT
MB-31	613 117 0599	BRACKET,HOLDER
MB-32	613 093 9159	PLATE,NUT
MB-33	613 093 8374	DAMPER,MOTOR
MB-34	613 077 3616	DAMPER,WORM
MB-35	613 121 9960	ASSY,LOADING MOTOR
MB-36	613 092 9945	DAMPER,MOTOR
MB-37	613 132 8075	COMPL PCB,MC-3
MB-38	613 153 5107	COMPL PWB,MC-2
MB-39	613 110 0374	ROTARY SWITCH
MB-40	411 126 5303	SCR PAN 2.6X13
MB-41	613 092 9921	ASSY,SLIDE,FRONT
MB-42	613 092 5985	SPRING,LEVER LOAD
MB-43	613 092 5992	SPRING,LEVER ACT
MB-44	613 092 5886	HOLDER,WORM
OR	613 138 8628	HOLDER,WORM
MB-45	613 027 0627	WASHER 2.1X6X0.5
MB-46	613 092 9938	ASSY,WORM,LOAD
MB-47	613 022 2985	BELT,LOADING
MB-48	412 033 4106	WASHER SLIT 2.6X5X0.50
MB-49	613 077 3579	GEAR,HELICAL
MB-50	613 102 9293	ASSY,LEVER,REV GUIDE
MB-51	613 022 1568	SPRING,REVIEW LEVER
MB-52	613 022 0158	COMPL,PINCH ROLLER
MB-53	613 147 9951	SPRING,PINCH ROLLER
MB-54	411 109 2107	WASHER Y 3.6X6X0.5
MB-55	613 078 8160	COMPL,LEVER,ACT BRAKE
MB-57	613 135 7655	PLATE,BGR
MB-58	613 145 5009	ASSY,MOUNTING,ROLLER S
MB-59	613 145 5016	ASSY,MOUNTING,ROLLER T
MB-60	411 063 0904	SCR SET HEX-SCT 2X3
MB-61	613 022 0233	ASSY,GUIDE,ROLLER
MB-63	645 000 2533	HEAD,ERASE FULL
MB-66	613 153 1871	LEVER,FE HEAD
MB-67	613 022 1698	SPRING,ERASE HEAD
MB-80	411 109 1803	WASHER Y 2.6X6X0.5
MB-81	613 119 8562	ASSY,ROLLER,CLEANER
OR	613 157 4052	ASSY,ROLLER,CLEANER
MB-82	613 143 1881	ASSY,LEVER,CLEANER
MB-83	613 119 8593	SPRING
MB-84	613 142 9055	BRACKET,CLEANER
MB-90	613 153 8627	FLEXIBLE FLAT CABLE,CN811-CN303

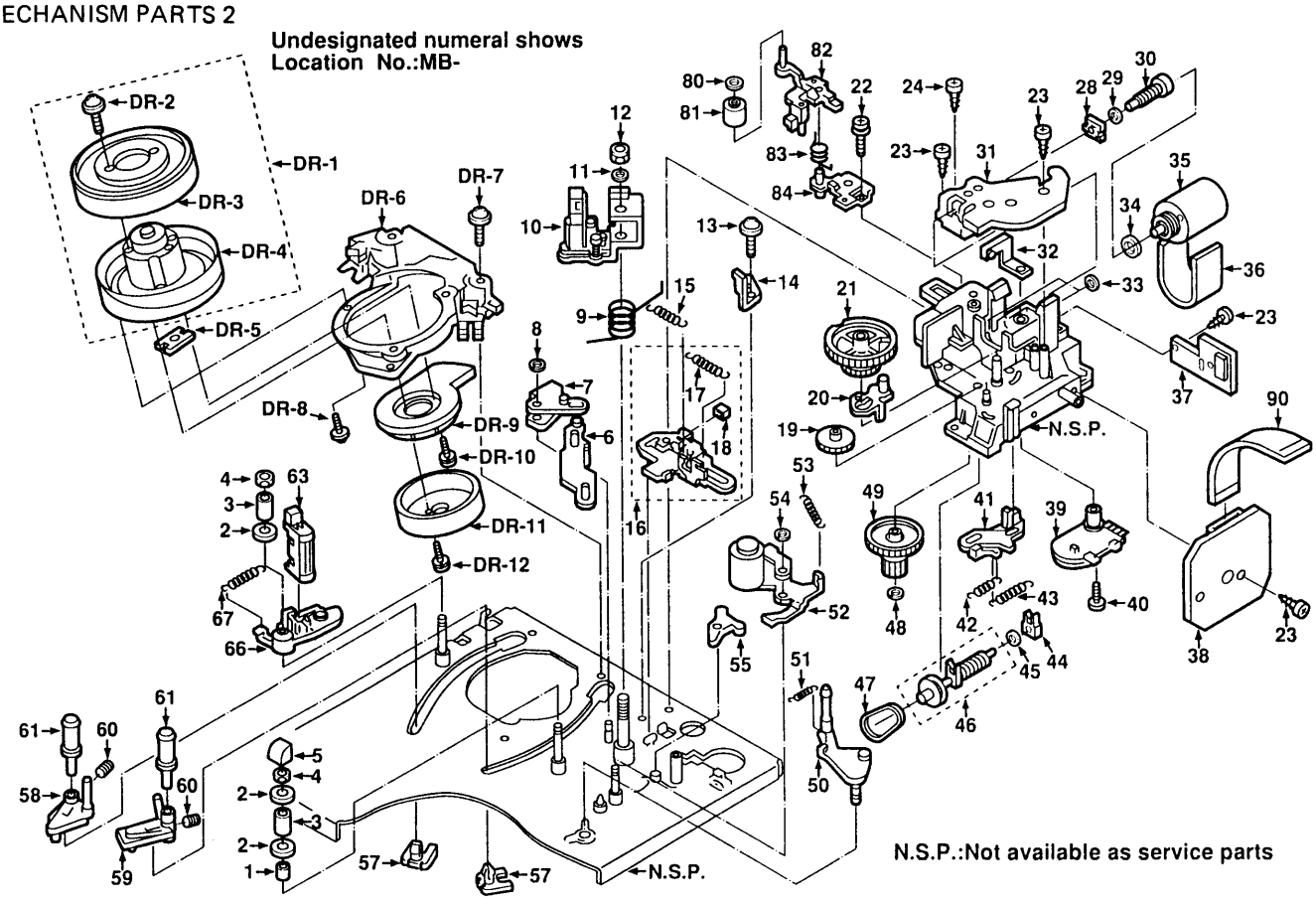
****

MECHANISM PARTS 3

MC-1	645 000 5053	MOTOR,CAPSTAN DC 3W
MC-2	613 022 2978	BELT,REEL DRIVE
MC-3	613 135 4609	COMPL,LEVER,CLUTCH
MC-6	613 022 1520	SPRING,LEVER CLUTCH
MC-7	613 082 3434	LEVER,CHANGE CLUTCH
MC-8	613 022 1711	SPRING,CHANGE CLUTCH
MC-9	613 081 7518	ASSY,BRAKE CAPSTAN
MC-10	613 098 2285	SPRING,CAPSTAN
MC-12	411 021 3107	SCR S-TPG BIN 2.6X8
MC-13	411 109 2008	WASHER Y 3.1X8X0.5
MC-14	613 142 9093	SLIDE,CAM PLATE
MC-15	613 022 2701	CAM,MODE
MC-16	411 109 1902	WASHER Y 3.1X6X0.5
MC-17	613 135 7686	CAM,MAIN
MC-18	613 135 7532	ASSY,RACK,LOAD
MC-19	411 109 1803	WASHER Y 2.6X6X0.5
MC-20	613 135 7648	SPACER,RACK LOAD
MC-22	411 047 6809	SCR PAN+FLG 3X4
MC-23	613 021 9763	ASSY,EARTH,CYL
MC-24	613 135 7662	GEAR,LOAD TAKE UP
MC-25	613 022 1551	SPRING,GEAR LOAD T
MC-26	613 021 9879	ASSY,LEVER,LOAD T
MC-27	613 090 6373	GEAR,LOAD S
MC-28	613 022 1704	SPRING,GEAR LOAD S
MC-29	613 021 9862	ASSY,LEVER,LOAD S
MC-30	613 022 2039	LEVER,RETURN TENSION
MC-31	613 091 3104	ASSY,LEVER CONTROL
MC-34	411 028 6309	SCR S-TPG PAN 2.6X6
MC-35	412 015 8603	SPECIAL WASHER 3.1X6X0.25
MC-36	613 130 9890	ASSY,GEAR,FRICTION
MC-37	412 045 4606	SPECIAL WASHER 2.4X6X0.25
MC-38	411 092 0906	WASHER Z 2.6X10X0.5
MC-40	411 100 0300	SCR S-TPG BIN 2.6X5
MC-41	613 120 9060	COMPL,MC-1

MECHANISM PARTS 2

Undesignated numeral shows Location No.:MB-

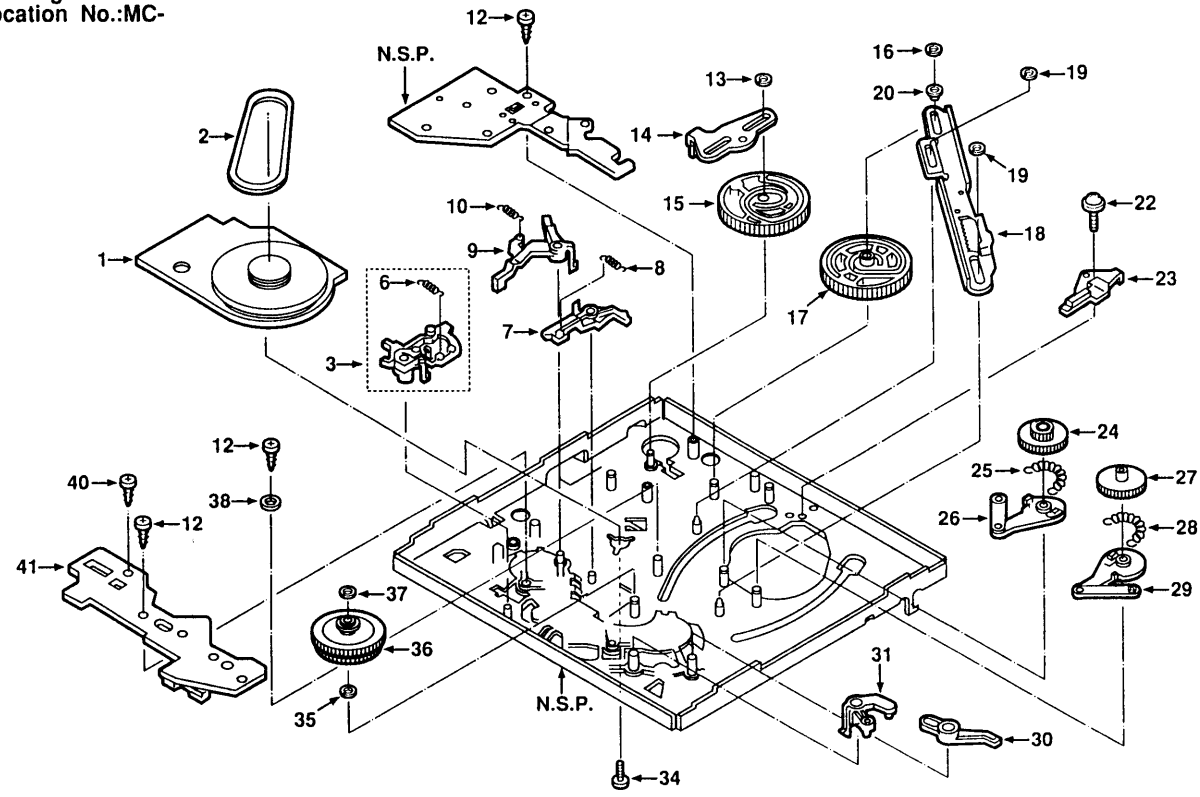


N.S.P.:Not available as service parts

92TP1/MB-1

MECHANISM PARTS 3

Undesignated numeral shows Location No.:MC-



93TP1/MC-1

N.S.P.:Not available as service parts

ELECTRICAL PARTS

NOTE;

1. Materials of Capacitors and Resistors are abbreviated as follows;

Resistors

MT-FILM	Metallized Film Resistor
MT-GLAZE	Metallized Glaze Resistor
OXIDE-MT	Oxide Metallized Film Resistor

Capacitors

MT-POLYEST	Metallized Polyester Capacitor
MT-COMPO	Metallized Composite Capacitor
TA-SOLID	Tantalum Solid Capacitor
AL-SOLID	Aluminum Solid Capacitor
NP-ELECT	Non-Polarized Electrolytic Capacitor
OS-SOLID	Aluminum Solid Capacitors with Organic Semiconductive Electrolytic Capacitor
DL-ELECT	Double Layered Electrolytic Capacitor

2. Tolerance of Capacitor(10pF over) and Resistor are noted with follow symboles.
   F ····· ±1% G ····· ±2% J ····· ±5% K ····· ±10%
   M ····· ±20% N ····· ±30% Z ····· +80% ~ −20%
3. Capacitors
   U : uF P : pF
4. Inductors
   UH : uH MH : mH
5. N.S.P. : Not available as service parts.

LOCATION	PARTS NO.	DESCRIPTION
COMPL PWB,CP-1-A		
COMPL.NO	613 155 3798	
(SEMICONDUCTORS)		
Q1002	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1003	405 064 0100	TR 2SA1561-Q
OR	405 064 0209	TR 2SA1561-R
OR	405 123 6708	TR 2SB1320A-Q
OR	405 123 6807	TR 2SB1320A-R
Q1004	405 064 0100	TR 2SA1561-Q
OR	405 064 0209	TR 2SA1561-R
OR	405 123 6708	TR 2SB1320A-Q
OR	405 123 6807	TR 2SB1320A-R
Q1006	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1011	405 063 9708	TR DTC144EL
OR	405 123 6500	TR UN6213
Q1012	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1151	405 063 9906	TR DTC124EL
OR	405 123 6401	TR UN6212
Q1152	405 063 9609	TR DTA114EL
OR	405 124 2709	TR UN6111
Q1301	405 063 9104	TR DTA144EL
OR	405 123 6609	TR UN6113
Q1601	405 004 4601	TR 2SA608-F-SPA
OR	405 006 1806	TR 2SA933S-R
Q1621	405 019 2005	TR 2SC536-E-SPA
OR	405 019 2807	TR 2SC536-F-SPA
OR	405 011 8401	TR 2SC1740S-Q
OR	405 011 8500	TR 2SC1740S-R
OR	405 093 0607	TR KSC2785-Y
Q1622	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1623	405 064 0100	TR 2SA1561-Q
OR	405 064 0209	TR 2SA1561-R
Q1623	405 123 6708	TR 2SB1320A-Q
OR	405 123 6807	TR 2SB1320A-R
Q1653	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1654	405 064 0100	TR 2SA1561-Q
OR	405 064 0209	TR 2SA1561-R
OR	405 123 6708	TR 2SB1320A-Q
OR	405 123 6807	TR 2SB1320A-R
Q2001	405 018 0002	TR 2SC3331-S
OR	405 018 0101	TR 2SC3331-T
OR	405 018 0200	TR 2SC3331-U
Q2002	405 063 9708	TR DTC144EL
OR	405 123 6500	TR UN6213
Q2003	405 003 7702	TR 2SA1346
OR	405 000 1208	TR DTA124ES
Q3503	405 063 9708	TR DTC144EL
OR	405 123 6500	TR UN6213
Q3504	405 063 9708	TR DTC144EL
OR	405 123 6500	TR UN6213
Q3553	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q5001	405 094 6905	TR 2SK1460
OR	405 126 0208	TR 2SK1460LS
Q5002	405 013 7006	TR 2SC2274-F
OR	405 013 7303	TR 2SC2274K-F
Q5003	405 006 6702	TR 2SA984-F
Q5004	405 013 7006	TR 2SC2274-F
OR	405 013 7303	TR 2SC2274K-F
Q5101	405 013 7006	TR 2SC2274-F
OR	405 013 7303	TR 2SC2274K-F
Q5102	405 013 7006	TR 2SC2274-F
OR	405 013 7303	TR 2SC2274K-F
Q5103	405 003 7603	TR 2SA1345
OR	405 000 2205	TR DTA144ES
Q5104	405 018 2501	TR 2SC3399
OR	405 000 6104	TR DTC144ES
Q6001	405 073 6407	TR 2SK772-E

LOCATION	PARTS NO.	DESCRIPTION
Q6001	405 073 6506	TR 2SK772-F
OR	405 026 9004	TR 2SK222-D
OR	405 026 9103	TR 2SK222-E
OR	405 114 7806	TR 2SK1104-P
OR	405 114 7905	TR 2SK1104-Q
OR	405 114 8001	TR 2SK1104-R
Q6002	405 018 2501	TR 2SC3399
OR	405 000 6104	TR DTC144ES
Q6051	405 004 4007	TR 2SA608-E-SPA
OR	405 006 1707	TR 2SA933S-Q
OR	405 093 0508	TR KSA1175-Y
OR	405 004 4601	TR 2SA608-F-SPA
OR	405 006 1806	TR 2SA933S-R
Q6052	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q6901	405 019 2005	TR 2SC536-E-SPA
OR	405 011 8401	TR 2SC1740S-Q
OR	405 093 0607	TR KSC2785-Y
OR	405 019 2807	TR 2SC536-F-SPA
OR	405 011 8500	TR 2SC1740S-R
Q6902	405 004 4007	TR 2SA608-E-SPA
OR	405 006 1707	TR 2SA933S-Q
OR	405 093 0508	TR KSA1175-Y
OR	405 004 4601	TR 2SA608-F-SPA
OR	405 006 1806	TR 2SA933S-R
Q6903	405 019 2005	TR 2SC536-E-SPA
OR	405 011 8401	TR 2SC1740S-Q
OR	405 093 0607	TR KSC2785-Y
OR	405 019 2807	TR 2SC536-F-SPA
OR	405 011 8500	TR 2SC1740S-R
Q6904	405 018 2501	TR 2SC3399
OR	405 000 6104	TR DTC144ES
Q6921	405 084 8209	TR 2SC2960-F-SPA
OR	405 084 8308	TR 2SC2960-G-SPA
(INTEGRATED CIRCUITS)		
IC101	409 326 0204	IC LA7345AM
OR	409 333 9900	IC LA7345AM-MPS
IC111	409 297 6205	IC LC89925
IC161	409 003 4501	IC BA7021
OR	409 120 3401	IC LA7221
IC162	410 174 3200	IC LC74760M-8797
IC201	409 262 2409	IC LA7285M
IC301	410 211 5402	IC LC866648V-5555
IC302	409 314 2005	IC LB1643
IC303	409 313 0903	IC MN1381-L
OR	409 243 4101	IC MN1380-L
IC351	409 323 3109	IC BU2896K
IC511	409 067 7203	IC L5431
IC512	409 225 2309	IC PQ12RF11
IC602	409 283 6202	IC LE24C02S1
OR	409 247 7702	IC ST24C02AB1
OR	410 172 6807	IC X24C02P-C7189
IC692	409 026 8203	IC L5631
OR	409 057 5103	IC UPC574J
(DIODES)		
D1003	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1004	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1008	407 007 9904	DIODE GMA01

LOCATION	PARTS NO.	DESCRIPTION
D1008	407 012 4406	DIODE 1SS133
D1009	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1301	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1601	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1602	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1611	407 070 7104	ZENER DIODE GZS5.6X
OR	407 053 6704	ZENER DIODE MTZ5.6B
D1621	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1622	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1671	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D3001	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3102	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3106	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3107	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3121	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3122	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3123	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3502	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D3510	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D5001	407 134 8900	DIODE DBC10G
D5003	407 078 2705	DIODE 1SS244
D5004	407 078 2705	DIODE 1SS244
D5006	407 078 2705	DIODE 1SS244
D5010	407 091 6704	DIODE AP01C
D5013 ⚠	407 151 3308	PHOTO COUPLE PC120FB
D5101	407 153 5409	DIODE RK36LF-B1
D5102	407 129 2005	DIODE RL2Z-LF-B1
D5103	407 078 2705	DIODE 1SS244
D5104	407 078 2705	DIODE 1SS244
D5105	407 100 6909	DIODE AG01
D5108	407 063 8903	ZENER DIODE MTZJ5.6C
D5109	407 063 8903	ZENER DIODE MTZJ5.6C
D5110	407 004 9709	DIODE DSK10C
OR	407 005 8701	DIODE ERA15-02
D5112	407 063 8903	ZENER DIODE MTZJ5.6C
D6901	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D6902	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D6903	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
(CRYSTAL DEVICES)		
X1001	645 000 6012	OSC,CRYSTAL 4.433619MHZ
OR	645 000 6029	OSC,CRYSTAL 4.433619MHZ
OR	645 002 4436	OSC,CRYSTAL 4.433619MHZ
X1621	613 002 8709	CRYSTAL 17.734475MHZ
OR	613 127 1555	OSC,CRYSTAL 17.734475MHZ

LOCATION	PARTS NO.	DESCRIPTION
X3001	645 003 5852	OSC,CERAMIC 13.31MHZ
OR	645 003 4510	OSC,CERAMIC 13.31MHZ
X3002	613 109 0972	OSC,CRYSTAL 32KHZ
OR	613 123 6387	OSC,CRYSTAL 32.768KHZ
(VARIABLE RESISTORS)		
VR101	613 120 8438	VR,SEMI 22KB
OR	613 120 8582	VR,SEMI 22KB
VR102	613 120 8421	VR,SEMI 2.2KB
OR	613 120 8575	VR,SEMI 2.2KB
VR103	613 147 7216	VR,SEMI 6.8KB
OR	613 147 7223	VR,SEMI 6.8KB
VR104	613 079 2532	VR,SEMI 10KB
OR	613 120 8544	VR,SEMI 10KB
VR201	613 097 7915	VR,SEMI 100KB
OR	613 001 9097	SEMI VR 100KB
VR351	613 097 7953	VR,SEMI 220KB
OR	613 001 9110	SEMI VR 220KB
(TRIMMER)		
CT120	613 002 6378	TRIMMER
(INDUCTORS)		
L1004	613 014 0999	COIL,INDUCTOR 150UHK
OR	613 014 4515	HF CHOKE 150UHK
L1005	613 014 0999	COIL,INDUCTOR 150UHK
OR	613 014 4515	HF CHOKE 150UHK
L1007	613 014 0883	COIL,INDUCTOR 18UHK
OR	613 014 4409	HF CHOKE 18UHK
L1008	613 014 0876	COIL,INDUCTOR 15UHK
OR	613 014 4393	HF CHOKE 15UHK
L1010	613 014 0906	COIL,INDUCTOR 27UHK
OR	613 014 4423	HF CHOKE 27UHK
L1012	613 014 1156	COIL,INDUCTOR 39UHJ
OR	613 014 4676	HF CHOKE 39UHJ
L1013	613 014 0913	COIL,INDUCTOR 33UHK
OR	613 014 4430	HF CHOKE 33UHK
L1081	613 014 0975	COIL,INDUCTOR 100UHK
OR	613 014 4492	HF CHOKE 101UHK
L1101	613 014 1019	COIL,INDUCTOR 220UHK
OR	613 014 4539	HF CHOKE 220UHK
L1622	613 014 0821	COIL,INDUCTOR 5.6UHK
OR	613 014 4348	HF CHOKE 5.6UHK
L2002	613 014 3532	HF CHOKE 10000UHJ
L2003	613 015 6297	COIL,INDUCTOR 560UHJ
L3001	645 000 4070	CORE,BEAD
OR	613 017 0408	CORE
L5001 ⚠	645 002 1886	LINE FILTER
L5010	613 107 6884	FERRITE CORE
L5101	613 107 6884	FERRITE CORE
L5102	613 107 6884	FERRITE CORE
L6008	613 014 0852	COIL,INDUCTOR 10UHK
OR	613 014 4379	HF CHOKE 10UHK
L6009	613 015 6082	COIL,INDUCTOR 10UHJ
L6051	613 014 0975	COIL,INDUCTOR 100UHK
OR	613 014 4492	HF CHOKE 101UHK
L6602	613 014 0852	COIL,INDUCTOR 10UHK
OR	613 014 4379	HF CHOKE 10UHK
L6604	613 014 0739	COIL,INDUCTOR 1.0UHK
OR	613 014 4256	HF CHOKE 1.0UHM
L6606	613 014 0821	COIL,INDUCTOR 5.6UHK
OR	613 014 4348	HF CHOKE 5.6UHK

LOCATION	PARTS NO.	DESCRIPTION
(TRANSFORMERS)		
T2001	613 098 6023	TRANS,OSC 70KHZ
OR	621 019 9596	TRANS,OSC,70KHZ
OR	645 004 7480	TRANS,OSC,70KHZ
T5001 ⚠	645 004 2164	TRANS,POWER,PULSE
(DELAY LINES)		
DL101	645 000 5992	DELAY LINE(COMB)
OR	645 000 6005	DELAY LINE(COMB)
(CAPACITORS)		
C1002	403 072 4202	CERAMIC 270P J 50V
C1003	403 068 8801	CERAMIC 100P J 50V
C1005	403 139 2707	ELECT 1U M 50V
C1006	403 025 7304	CERAMIC 4.7P K 50V
C1007	403 073 2702	CERAMIC 390P J 50V
C1008	403 017 9705	CERAMIC 22P J 50V
C1010	403 075 3103	CERAMIC 82P J 50V
C1011	403 139 2707	ELECT 1U M 50V
C1012	403 139 1502	ELECT 10U M 16V
C1013	403 139 2608	ELECT 0.47U M 50V
C1014	403 001 1906	CERAMIC 0.01U M 16V
C1015	403 120 9203	CERAMIC 0.033U J 16V
C1016	403 120 9005	CERAMIC 0.022U J 16V
C1021	403 073 2702	CERAMIC 390P J 50V
C1022	403 217 5507	CERAMIC 0.1U J 16V
C1023	403 030 6309	CERAMIC 68P J 50V
C1028	403 001 1906	CERAMIC 0.01U M 16V
C1030	403 191 8709	ELECT 1U M 50V
C1031	403 191 8709	ELECT 1U M 50V
C1032	403 120 9609	CERAMIC 0.047U J 16V
C1033	403 001 1906	CERAMIC 0.01U M 16V
C1036	403 191 8709	ELECT 1U M 50V
C1037	403 191 8808	ELECT 2.2U M 50V
C1038	403 120 9005	CERAMIC 0.022U J 16V
C1039	403 120 9609	CERAMIC 0.047U J 16V
C1040	403 001 1906	CERAMIC 0.01U M 16V
C1041	403 189 2405	ELECT 10U M 16V
C1043	403 222 1105	CERAMIC 0.047U Z 16V
C1044	403 163 7907	ELECT 47U M 6.3V
C1046	403 139 1502	ELECT 10U M 16V
C1047	403 139 1502	ELECT 10U M 16V
C1048	403 001 1906	CERAMIC 0.01U M 16V
C1052	403 001 1906	CERAMIC 0.01U M 16V
C1053	403 001 1906	CERAMIC 0.01U M 16V
C1058	403 019 9703	CERAMIC 27P J 50V
C1060	403 022 7703	CERAMIC 33P J 50V
C1061	403 026 2209	CERAMIC 47P J 50V
C1062	403 071 1509	CERAMIC 180P J 50V
C1081	403 074 8703	CERAMIC 680P J 50V
C1092	403 072 7500	CERAMIC 330P J 50V
C1093	403 121 9509	CERAMIC 0.1U Z 50V
C1094	403 121 9509	CERAMIC 0.1U Z 50V
C1096	403 121 9509	CERAMIC 0.1U Z 50V
C1097	403 154 3307	OS-SOLID 4.7U M 10V
C1101	403 139 1007	ELECT 47U M 6.3V
C1102	403 001 1906	CERAMIC 0.01U M 16V
C1105	403 010 7807	CERAMIC 12P J 50V
C1109	403 001 1906	CERAMIC 0.01U M 16V
C1110	403 139 2707	ELECT 1U M 50V
C1601	403 121 9509	CERAMIC 0.1U Z 50V
C1602	403 223 9308	ELECT 470U M 6.3V
C1611	403 193 8608	ELECT 0.47U M 50V
C1613	403 222 1105	CERAMIC 0.047U Z 16V
C1614	403 139 1502	ELECT 10U M 16V
C1621	403 012 6006	CERAMIC 15P J 50V
C1622	403 012 6006	CERAMIC 15P J 50V
C1623	403 163 7907	ELECT 47U M 6.3V

LOCATION	PARTS NO.	DESCRIPTION		
C1624	403 167 6609	ELECT	47U M	10V
C1625	403 189 2405	ELECT	10U M	16V
C1627	403 213 0605	CERAMIC	1200P K	16V
C1628	403 191 8709	ELECT	1U M	50V
C1630	403 119 7104	CERAMIC	6800P K	16V
C1631	403 086 2805	NP-ELECT	1U M	50V
C1632	403 138 2500	CERAMIC	0.022U K	16V
C1633	403 019 0403	CERAMIC	24P J	50V
C1634	403 009 1809	CERAMIC	10P J	50V
C1636	403 001 1906	CERAMIC	0.01U M	16V
C2002	403 075 4001	CERAMIC	820P J	50V
C2004	403 139 0901	ELECT	33U M	6.3V
C2005	403 150 0201	CERAMIC	0.018U K	16V
C2009	403 139 1205	ELECT	22U M	10V
C2010	403 139 1007	ELECT	47U M	6.3V
C2013	403 002 8201	CERAMIC	0.015U J	25V
C2016	403 139 2202	ELECT	4.7U M	25V
C2017	403 139 1502	ELECT	10U M	16V
C2019	403 163 8409	ELECT	47U M	16V
C2020	403 071 6207	CERAMIC	220P K	50V
C2021	403 082 4209	POLYPRO	6800P J	100V
C2022	403 001 1906	CERAMIC	0.01U M	16V
C2024	403 001 1906	CERAMIC	0.01U M	16V
C2054	403 121 9509	CERAMIC	0.1U Z	50V
C2071	403 001 3306	CERAMIC	1200P M	16V
C2072	403 139 2905	ELECT	2.2U M	50V
C2073	403 003 4707	CERAMIC	0.027U J	25V
C2091	403 121 9509	CERAMIC	0.1U Z	50V
C2092	403 001 5102	CERAMIC	2200P M	16V
C2101	403 121 9509	CERAMIC	0.1U Z	50V
C2102	403 121 9509	CERAMIC	0.1U Z	50V
C2152	403 069 1207	CERAMIC	1000P K	50V
C2153	403 001 8905	CERAMIC	6800P M	16V
C3001	403 009 1700	CERAMIC	10P J	50V
C3002	403 017 0108	CERAMIC	20P J	50V
C3004	403 001 1906	CERAMIC	0.01U M	16V
C3005	403 001 1906	CERAMIC	0.01U M	16V
C3008	403 150 6500	ELECT	22U M	16V
C3009	403 001 1906	CERAMIC	0.01U M	16V
C3010	403 191 8808	ELECT	2.2U M	50V
C3011	403 121 9509	CERAMIC	0.1U Z	50V
C3012	403 001 1906	CERAMIC	0.01U M	16V
C3013	403 001 1906	CERAMIC	0.01U M	16V
C3014	403 223 9308	ELECT	470U M	6.3V
C3016	403 001 1906	CERAMIC	0.01U M	16V
C3017	403 069 1207	CERAMIC	1000P K	50V
C3021	403 026 2209	CERAMIC	47P J	50V
C3022	403 265 4408	DL-ELECT	0.1F Z	5.5V
C3023	403 010 7708	CERAMIC	12P J	50V
C3501	403 129 9709	CERAMIC	0.015U K	16V
C3502	403 001 8806	CERAMIC	6800P K	16V
C3503	403 129 9709	CERAMIC	0.015U K	16V
C3505	403 150 6500	ELECT	22U M	16V
C3506	403 001 8806	CERAMIC	6800P K	16V
C3508	403 150 6500	ELECT	22U M	16V
C3509	403 163 7907	ELECT	47U M	6.3V
C3511	403 071 6207	CERAMIC	220P K	50V
C3512	403 270 2307	MT-COMPO	0.039U J	50V
C3513	403 119 6701	CERAMIC	0.068U K	16V
C3514	403 058 5308	POLYESTER	0.15U K	50V
C3515	403 059 6007	POLYESTER	0.022U K	50V
C3516	403 001 5003	CERAMIC	2200P K	16V
C3517	403 001 3801	CERAMIC	1500P K	16V
C3522	403 069 1207	CERAMIC	1000P K	50V
C3523	403 191 8709	ELECT	1U M	50V
C3524	403 001 1906	CERAMIC	0.01U M	16V

LOCATION	PARTS NO.	DESCRIPTION		
C3525	403 193 8608	ELECT	0.47U M	50V
C3526	403 184 9607	MT-POLYEST	0.082U J	50V
C3530	403 163 7907	ELECT	47U M	6.3V
C3536	403 193 7601	ELECT	220U M	6.3V
C3540	403 068 9402	CERAMIC	100P K	50V
C3551	403 263 5605	MT-COMPO	0.12U J	50V
C3552	403 028 3402	CERAMIC	56P J	50V
C3553	403 191 8709	ELECT	1U M	50V
C3554	403 070 7205	CERAMIC	150P J	50V
C3556	403 069 1207	CERAMIC	1000P K	50V
C3558	403 149 0700	ELECT	33U M	16V
C3570	403 121 9509	CERAMIC	0.1U Z	50V
C5001 ⚠	404 055 5001	MT-POLYEST	0.22U M	250V
C5002 ⚠	404 055 4905	MT-POLYEST	0.068U M	250V
C5005 ⚠	404 032 8506	CERAMIC	1000P M	400V
C5007 ⚠	404 032 8506	CERAMIC	1000P M	400V
C5010	403 249 0204	ELECT	47U M	400V
C5011	403 057 3107	POLYESTER	0.1U K	50V
C5015	403 060 6201	POLYESTER	3300P K	50V
C5017	403 072 7500	CERAMIC	330P J	50V
C5020	403 255 8409	CERAMIC	39P J	1K
C5021	403 076 0507	CERAMIC	2200P K	500V
C5022	403 076 0507	CERAMIC	2200P K	500V
C5023	403 026 2209	CERAMIC	47P J	50V
C5025	403 137 5007	CERAMIC	100P K	1K
C5101	403 243 8107	ELECT	1000U M	6.3V
C5102	403 147 9200	ELECT	1000U M	6.3V
C5105	403 207 5005	ELECT	470U M	16V
C5106	403 218 3106	ELECT	1000U M	16V
C5108	403 209 4709	ELECT	22U M	50V
C5109	403 228 9600	ELECT	47U M	35V
C5110	403 243 7803	ELECT	220U M	6.3V
C5113	403 201 5001	ELECT	330U M	16V
C5115	403 121 9509	CERAMIC	0.1U Z	50V
C5116	403 248 3107	ELECT	3.3U M	50V
C5124	403 258 3807	ELECT	0.22U M	50V
C5135	403 057 3107	POLYESTER	0.1U K	50V
C6004	403 243 6806	MT-COMPO	0.1U J	50V
C6005	403 121 9509	CERAMIC	0.1U Z	50V
C6006	403 222 1105	CERAMIC	0.047U Z	16V
C6007	403 189 2405	ELECT	10U M	16V
C6008	403 228 6401	CERAMIC	0.033U Z	16V
C6009	403 248 1608	ELECT	47U M	16V
C6010	403 001 5102	CERAMIC	2200P M	16V
C6052	403 024 1501	CERAMIC	39P J	50V
C6053	403 022 7703	CERAMIC	33P J	50V
C6601	403 248 1905	ELECT	10U M	16V
C6602	403 248 1905	ELECT	10U M	16V
C6901	403 248 1400	ELECT	1U M	50V
C6903	403 001 1906	CERAMIC	0.01U M	16V
C6905	403 017 9705	CERAMIC	22P J	50V
C6907	403 248 1400	ELECT	1U M	50V
C6909	403 233 0302	ELECT	100U M	16V
C6910	403 069 1207	CERAMIC	1000P K	50V
C6922	403 233 1101	ELECT	22U M	50V
C6924	403 071 2001	CERAMIC	180P K	50V
C6925	403 256 4608	MT-COMPO	0.33U J	50V
C6926	403 263 5704	MT-COMPO	0.22U J	50V

(RESISTORS)

R1001	401 018 3708	CARBON	3.3K JA	1/4W
R1002	401 012 5609	CARBON	1K JA	1/4W
R1003	401 019 1802	CARBON	3.9K JA	1/4W
R1004	401 012 5609	CARBON	1K JA	1/4W
R1005	401 017 0708	CARBON	270 JA	1/4W
R1006	401 023 1607	CARBON	820 JA	1/4W
R1007	401 012 5609	CARBON	1K JA	1/4W

LOCATION	PARTS NO.	DESCRIPTION
R1008	401 017 1705	CARBON 2.7K JA 1/4W
R1009	401 022 1806	CARBON 680 JA 1/4W
R1010	401 016 3700	CARBON 2.2K JA 1/4W
R1012	401 012 5609	CARBON 1K JA 1/4W
R1013	401 012 5609	CARBON 1K JA 1/4W
R1014	401 016 3700	CARBON 2.2K JA 1/4W
R1019	401 016 4707	CARBON 22K JA 1/4W
R1020	401 013 6308	CARBON 12K JA 1/4W
R1021	401 012 5609	CARBON 1K JA 1/4W
R1022	401 019 0904	CARBON 390 JA 1/4W
R1024	401 012 5609	CARBON 1K JA 1/4W
R1026	401 012 9201	CARBON 1M JA 1/4W
R1027	401 023 2703	CARBON 8.2K JA 1/4W
R1028	401 015 2605	CARBON 1.8K JA 1/4W
R1029	401 012 5609	CARBON 1K JA 1/4W
R1032	401 016 4707	CARBON 22K JA 1/4W
R1033	401 012 5609	CARBON 1K JA 1/4W
R1035	401 020 0702	CARBON 470 JA 1/4W
R1036	401 014 4006	CARBON 1.5K JA 1/4W
R1038	401 012 5609	CARBON 1K JA 1/4W
R1040	401 014 2804	CARBON 150 JA 1/4W
R1044	401 013 6308	CARBON 12K JA 1/4W
R1046	401 018 4804	CARBON 33K JA 1/4W
R1047	401 023 2703	CARBON 8.2K JA 1/4W
R1048	401 020 1907	CARBON 4.7K JA 1/4W
R1049	401 013 6308	CARBON 12K JA 1/4W
R1052	401 012 5609	CARBON 1K JA 1/4W
R1053	401 018 2701	CARBON 330 JA 1/4W
R1054	401 018 3708	CARBON 3.3K JA 1/4W
R1059	401 015 2605	CARBON 1.8K JA 1/4W
R1063	401 016 4707	CARBON 22K JA 1/4W
R1071	401 017 1705	CARBON 2.7K JA 1/4W
R1072	401 015 2605	CARBON 1.8K JA 1/4W
R1105	401 019 1802	CARBON 3.9K JA 1/4W
R1106	401 022 3008	CARBON 6.8K JA 1/4W
R1601	401 021 1807	CARBON 560 JA 1/4W
R1602	401 022 6702	CARBON 75 JA 1/4W
R1603	401 015 0403	CARBON 18 JA 1/4W
R1611	401 012 5609	CARBON 1K JA 1/4W
R1614	401 012 5609	CARBON 1K JA 1/4W
R1615	401 022 6702	CARBON 75 JA 1/4W
R1616	401 018 2701	CARBON 330 JA 1/4W
R1617	401 019 0904	CARBON 390 JA 1/4W
R1621	401 016 4707	CARBON 22K JA 1/4W
R1622	401 019 7705	CARBON 4.3K JA 1/4W
R1623	401 014 4006	CARBON 1.5K JA 1/4W
R1624	401 012 6903	CARBON 10K JA 1/4W
R1625	401 022 3008	CARBON 6.8K JA 1/4W
R1626	401 012 8006	CARBON 100K JA 1/4W
R1627	401 016 2505	CARBON 220 JA 1/4W
R1628	401 012 4404	CARBON 100 JA 1/4W
R1629	401 016 2505	CARBON 220 JA 1/4W
R1630	401 014 4006	CARBON 1.5K JA 1/4W
R1631	401 022 3008	CARBON 6.8K JA 1/4W
R1632	401 012 5609	CARBON 1K JA 1/4W
R1633	401 012 5609	CARBON 1K JA 1/4W
R1651	401 023 2703	CARBON 8.2K JA 1/4W
R1652	401 013 6308	CARBON 12K JA 1/4W
R1653	401 021 0602	CARBON 56 JA 1/4W
R1656	401 012 6903	CARBON 10K JA 1/4W
R1657	401 021 2903	CARBON 5.6K JA 1/4W
R1658	401 021 2903	CARBON 5.6K JA 1/4W
R1659	401 012 6903	CARBON 10K JA 1/4W
R1671	401 012 4404	CARBON 100 JA 1/4W
R1673	401 020 1907	CARBON 4.7K JA 1/4W
R2001	401 012 4404	CARBON 100 JA 1/4W
R2002	401 017 1705	CARBON 2.7K JA 1/4W
R2003	401 020 7404	CARBON 51 JA 1/4W
R2004	401 019 3905	CARBON 390K JA 1/4W
R2005	401 021 8905	CARBON 6.2K JA 1/4W
R2009	401 012 9201	CARBON 1M JA 1/4W
R2010	401 012 6903	CARBON 10K JA 1/4W
R2011	401 014 5102	CARBON 15K JA 1/4W
R2012	401 018 4804	CARBON 33K JA 1/4W
R2013	401 022 3008	CARBON 6.8K JA 1/4W
R2014	401 013 5202	CARBON 1.2K JA 1/4W
R2018	401 016 4707	CARBON 22K JA 1/4W
R2021	401 018 1506	CARBON 33 JA 1/4W
R2022	401 019 9501	CARBON 47 JA 1/4W
R2023	401 014 5102	CARBON 15K JA 1/4W
R2024	401 021 7007	CARBON 6.8 JA 1/4W
R2071	401 022 0700	CARBON 68 JA 1/4W
R2091	401 017 1705	CARBON 2.7K JA 1/4W
R2101	401 019 2908	CARBON 39K JA 1/4W
R2102	401 017 2702	CARBON 27K JA 1/4W
R2103	401 019 2908	CARBON 39K JA 1/4W
R2104	401 016 4707	CARBON 22K JA 1/4W
R2105	401 020 7800	CARBON 510 JA 1/4W
R2106	401 023 1607	CARBON 820 JA 1/4W
R2107	401 021 1807	CARBON 560 JA 1/4W
R2108	401 017 1705	CARBON 2.7K JA 1/4W
R2109	401 017 1705	CARBON 2.7K JA 1/4W
R3001 ⚠	402 067 7402	FUSIBLE RES 3.3 JA 1/2W
R3004	401 014 4006	CARBON 1.5K JA 1/4W
R3008	401 020 1907	CARBON 4.7K JA 1/4W
R3009	401 020 1907	CARBON 4.7K JA 1/4W
R3010	401 020 1907	CARBON 4.7K JA 1/4W
R3011	401 020 2805	CARBON 47K JA 1/4W
R3012	401 020 1907	CARBON 4.7K JA 1/4W
R3013	401 020 1907	CARBON 4.7K JA 1/4W
R3014	401 016 0402	CARBON 200K JA 1/4W
R3015	401 016 0402	CARBON 200K JA 1/4W
R3018	401 012 6903	CARBON 10K JA 1/4W
R3019	401 018 8307	CARBON 36K JA 1/4W
R3020	401 012 6903	CARBON 10K JA 1/4W
R3023	401 012 5609	CARBON 1K JA 1/4W
R3024	401 012 5609	CARBON 1K JA 1/4W
R3025	401 012 5609	CARBON 1K JA 1/4W
R3026	401 012 5609	CARBON 1K JA 1/4W
R3032	401 018 4804	CARBON 33K JA 1/4W
R3034	401 013 6308	CARBON 12K JA 1/4W
R3035	401 012 6903	CARBON 10K JA 1/4W
R3036	401 012 6903	CARBON 10K JA 1/4W
R3046	401 020 1907	CARBON 4.7K JA 1/4W
R3047	401 015 9406	CARBON 2K JA 1/4W
R3048	401 013 9408	CARBON 1.3K JA 1/4W
R3049	401 017 1705	CARBON 2.7K JA 1/4W
R3050	401 016 0006	CARBON 20K JA 1/4W
R3051	401 016 0006	CARBON 20K JA 1/4W
R3061	401 020 2805	CARBON 47K JA 1/4W
R3062	401 018 4804	CARBON 33K JA 1/4W
R3101	401 012 8006	CARBON 100K JA 1/4W
R3102	401 012 8006	CARBON 100K JA 1/4W
R3103	401 012 8006	CARBON 100K JA 1/4W
R3104	401 012 8006	CARBON 100K JA 1/4W
R3501	401 012 8006	CARBON 100K JA 1/4W
R3502	401 012 8006	CARBON 100K JA 1/4W
R3503	401 018 5702	CARBON 330K JA 1/4W
R3504	401 014 6000	CARBON 150K JA 1/4W
R3505	401 014 5102	CARBON 15K JA 1/4W
R3506	401 016 5704	CARBON 220K JA 1/4W
R3507	401 014 6000	CARBON 150K JA 1/4W
R3508	401 017 2702	CARBON 27K JA 1/4W
R3516	401 012 6903	CARBON 10K JA 1/4W
R3517	401 020 2805	CARBON 47K JA 1/4W

LOCATION	PARTS NO.	DESCRIPTION
R3518	401 020 2805	CARBON 47K JA 1/4W
R3520	401 019 3905	CARBON 390K JA 1/4W
R3521	401 012 6903	CARBON 10K JA 1/4W
R3525	401 012 5609	CARBON 1K JA 1/4W
R3526	401 016 3700	CARBON 2.2K JA 1/4W
R3527	401 012 5609	CARBON 1K JA 1/4W
R3528	401 020 7800	CARBON 510 JA 1/4W
R3529	401 020 7800	CARBON 510 JA 1/4W
R3533	401 014 4006	CARBON 1.5K JA 1/4W
R3537	401 023 2703	CARBON 8.2K JA 1/4W
R3546	401 020 1907	CARBON 4.7K JA 1/4W
R3547	401 014 5102	CARBON 15K JA 1/4W
R3549	401 012 6903	CARBON 10K JA 1/4W
R3550	401 023 2703	CARBON 8.2K JA 1/4W
R3556	401 012 6903	CARBON 10K JA 1/4W
R3557	401 018 5702	CARBON 330K JA 1/4W
R3558	401 020 0702	CARBON 470 JA 1/4W
R3560	401 012 5609	CARBON 1K JA 1/4W
R5001	402 013 9108	SOLID 2.7M KB 1/2W
R5002	401 017 3709	CARBON 270K JA 1/4W
R5003	401 019 3905	CARBON 390K JA 1/4W
R5005	401 015 4609	CARBON 180K JA 1/4W
R5006	401 012 6903	CARBON 10K JA 1/4W
R5007	401 016 4707	CARBON 22K JA 1/4W
R5009	401 021 4006	CARBON 56K JA 1/4W
R5012	401 015 2605	CARBON 1.8K JA 1/4W
R5014	401 019 9501	CARBON 47 JA 1/4W
R5020	401 014 5102	CARBON 15K JA 1/4W
R5021	401 014 5102	CARBON 15K JA 1/4W
R5022	401 014 5102	CARBON 15K JA 1/4W
R5101	401 018 2701	CARBON 330 JA 1/4W
R5102	401 020 0702	CARBON 470 JA 1/4W
R5103	401 021 1807	CARBON 560 JA 1/4W
R5104	401 012 6903	CARBON 10K JA 1/4W
R5111	401 021 1807	CARBON 560 JA 1/4W
R5112	401 018 7904	CARBON 3.6K JA 1/4W
R5114	401 019 9501	CARBON 47 JA 1/4W
R5115	401 022 7105	CARBON 750 JA 1/4W
R5116	401 021 1807	CARBON 560 JA 1/4W
R5120	401 019 6104	CARBON 4.7 JA 1/4W
R5121	401 023 6206	CARBON 9.1 JA 1/4W
R5123	401 017 1705	CARBON 2.7K JA 1/4W
R5135	401 020 0702	CARBON 470 JA 1/4W
R6001	401 019 3905	CARBON 390K JA 1/4W
R6002	401 017 3709	CARBON 270K JA 1/4W
R6003	401 019 3905	CARBON 390K JA 1/4W
R6004	401 020 3802	CARBON 470K JA 1/4W
R6006	401 018 3708	CARBON 3.3K JA 1/4W
R6008	401 012 9201	CARBON 1M JA 1/4W
R6009	401 020 1907	CARBON 4.7K JA 1/4W
R6051	401 021 1807	CARBON 560 JA 1/4W
R6052	401 015 2605	CARBON 1.8K JA 1/4W
R6053	401 012 5609	CARBON 1K JA 1/4W
R6054	401 023 1607	CARBON 820 JA 1/4W
R6055	401 021 2903	CARBON 5.6K JA 1/4W
R6056	401 015 2605	CARBON 1.8K JA 1/4W
R6057	401 013 9408	CARBON 1.3K JA 1/4W
R6071 ⚠	402 042 0701	FUSIBLE RES 680 GA 1/4W
R6691	401 012 5609	CARBON 1K JA 1/4W
R6692	401 022 7105	CARBON 750 JA 1/4W
R6901	401 012 4404	CARBON 100 JA 1/4W
R6902	401 012 5609	CARBON 1K JA 1/4W
R6903	401 012 8006	CARBON 100K JA 1/4W
R6905	401 022 1806	CARBON 680 JA 1/4W
R6906	401 019 3905	CARBON 390K JA 1/4W
R6909	401 012 5609	CARBON 1K JA 1/4W
R6910	401 017 2702	CARBON 27K JA 1/4W
R6911	401 012 5609	CARBON 1K JA 1/4W
R6914	401 021 2903	CARBON 5.6K JA 1/4W
R6915	401 019 1802	CARBON 3.9K JA 1/4W
R6916	401 012 4404	CARBON 100 JA 1/4W
R6921	401 018 4804	CARBON 33K JA 1/4W
R6922	401 012 6903	CARBON 10K JA 1/4W
R6923	401 012 6903	CARBON 10K JA 1/4W
R6924	401 015 3701	CARBON 18K JA 1/4W
R6925	401 014 5102	CARBON 15K JA 1/4W
R6926	401 013 6308	CARBON 12K JA 1/4W
R6927	401 013 4106	CARBON 120 JA 1/4W
(SWITCHES)		
S3101	645 000 3363	SWITCH,PUSH
OR	613 139 4308	SW,PUSH
S3102	645 000 3363	SWITCH,PUSH
OR	613 139 4308	SW,PUSH
S3103	645 000 3363	SWITCH,PUSH
OR	613 139 4308	SW,PUSH
S3104	645 000 3363	SWITCH,PUSH
OR	613 139 4308	SW,PUSH
S3105	645 000 3363	SWITCH,PUSH
OR	613 139 4308	SW,PUSH
S3106	645 000 3363	SWITCH,PUSH
OR	613 139 4308	SW,PUSH
S3107	645 000 3363	SWITCH,PUSH
OR	613 139 4308	SW,PUSH
S3108	645 000 3363	SWITCH,PUSH
OR	613 139 4308	SW,PUSH
S3117	645 000 3363	SWITCH,PUSH
OR	613 139 4308	SW,PUSH
S3118	645 000 3363	SWITCH,PUSH
OR	613 139 4308	SW,PUSH
(FUSE)		
F5001 ⚠	423 022 6506	FUSE 250V 2.5A
(PROTECTOR)		
PR511 ⚠	613 000 2303	CIRCUIT PROTECTOR
(CONNECTORS)		
CN161	613 111 5712	SOCKET,21P
OR	645 002 4528	SOCKET,RGB 21P
OR	645 003 1656	SOCKET,RGB 21P
CN501 ⚠	645 000 5411	SOCKET,INLET AC
(MISCELLANEOUS)		
	613 053 8055	FIXER
	613 136 4547	HOLDER,FUSE,F5001
OR	613 136 4554	HOLDER,FUSE,F5001

****

COMPL PWB,VP-1

COMPL.NO	613 154 2754	
(SEMICONDUCTORS)		
Q1801	405 015 8407	TR 2SC2812-L5
OR	405 015 8704	TR 2SC2812-L6
OR	405 014 4509	TR 2SC2412K-R
OR	405 014 4608	TR 2SC2412K-S
Q1851	405 015 8407	TR 2SC2812-L5
OR	405 015 8704	TR 2SC2812-L6
OR	405 014 4509	TR 2SC2412K-R
OR	405 014 4608	TR 2SC2412K-S
Q1852	405 015 9701	TR 2SC2814-F4
OR	405 015 9909	TR 2SC2814-F5
OR	405 035 6100	TR 2SC2413K-Q

LOCATION	PARTS NO.	DESCRIPTION
(INTEGRATED CIRCUIT)		
IC181	409 302 2802	IC LA7377A
(VARIABLE RESISTORS)		
VR182	613 117 1718	VR,SEMI 2.2KB
OR	613 002 0369	SEMI VR 2.2KB
(INDUCTORS)		
L1801	613 014 0968	COIL,INDUCTOR 82UHK
OR	613 014 4485	HF CHOKE 82UHK
L1802	613 014 0951	COIL,INDUCTOR 68UHK
OR	613 014 4478	HF CHOKE 68UHK
L1851	613 014 0821	COIL,INDUCTOR 5.6UHK
OR	613 014 4348	HF CHOKE 5.6UHK
L1852	613 014 0944	COIL,INDUCTOR 56UHK
OR	613 014 4461	HF CHOKE 56UHK
L1853	613 014 0876	COIL,INDUCTOR 15UHK
OR	613 014 4393	HF CHOKE 15UHK
L1854	613 014 0876	COIL,INDUCTOR 15UHK
OR	613 014 4393	HF CHOKE 15UHK
(CAPACITORS)		
C1801	403 154 3307	OS-SOLID 4.7U M 10V
C1804	403 069 5601	CERAMIC 0.01U K 50V
C1805	403 193 8509	ELECT 0.33U M 50V
C1807	403 026 7600	CERAMIC 470P J 50V
C1808	403 034 6800	CERAMIC 91P J 50V
C1809	403 069 5601	CERAMIC 0.01U K 50V
C1810	403 069 5601	CERAMIC 0.01U K 50V
C1811	403 069 5601	CERAMIC 0.01U K 50V
C1812	403 069 5601	CERAMIC 0.01U K 50V
C1813	403 073 1200	CERAMIC 0.033U K 50V
C1814	403 073 1200	CERAMIC 0.033U K 50V
C1851	403 069 5601	CERAMIC 0.01U K 50V
C1852	403 022 8304	CERAMIC 33P J 50V
C1853	403 022 8304	CERAMIC 33P J 50V
C1854	403 026 2902	CERAMIC 47P J 50V
C1855	403 028 4201	CERAMIC 56P J 50V
C1861	403 069 5601	CERAMIC 0.01U K 50V
C1862	403 163 7907	ELECT 47U M 6.3V
(RESISTORS)		
R1801	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R1803	401 037 5608	MT-GLAZE 10K JA 1/10W
R1805	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R1807	401 037 6704	MT-GLAZE 1.2K JA 1/10W
R1808	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R1811	401 038 7205	MT-GLAZE 5.1K JA 1/10W
R1813	401 037 5400	MT-GLAZE 1K JA 1/10W
R1814	401 038 0800	MT-GLAZE 22K JA 1/10W
R1815	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R1816	401 037 6704	MT-GLAZE 1.2K JA 1/10W
R1851	401 037 5400	MT-GLAZE 1K JA 1/10W
R1852	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R1853	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R1854	401 038 5003	MT-GLAZE 390 JA 1/10W
R1855	401 038 5003	MT-GLAZE 390 JA 1/10W
R1856	401 038 9605	MT-GLAZE 750 JA 1/10W
R1857	401 039 0304	MT-GLAZE 820 JA 1/10W
R1858	401 039 0304	MT-GLAZE 820 JA 1/10W
R1859	401 038 7601	MT-GLAZE 560 JA 1/10W
R1860	401 038 2002	MT-GLAZE 270 JA 1/10W
(JUMPERS)		
J1863	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1886	401 037 5004	MT-GLAZE 0.000 ZA 1/10W

****

LOCATION	PARTS NO.	DESCRIPTION
COMPL PWB,TM-1		
COMPL.NO	613 153 2465	
(REMOTE RECEIVERS)		
RR701	613 129 0938	IR RECEIVER PACK UNIT
OR	613 134 9087	IR RECEIVER PACK UNIT
(DISPLAYS)		
A7001	645 004 0597	FLUORESCENT TUBE
OR	645 004 0603	FLUORESCENT TUBE
(MISCELLANEOUS)		
	613 139 2267	HOLDER FL

****

COMPL PWB,TM-7(OPTION)		
COMPL.NO	613 154 4925	
(INTEGRATED CIRCUIT)		
IC771	409 327 9909	IC MV1821
(CRISTAL DEVICE)		
X7701	645 004 6797	OSC,CRYSTAL 6.9375MHZ
(INDUCTORS)		
L7701	613 014 0852	COIL,INDUCTOR 10UHK
OR	613 014 4379	HF CHOKE 10UHK
(CAPACITORS)		
C7701	403 191 8709	ELECT 1U M 50V
C7702	403 159 1001	CERAMIC 0.22U Z 16V
C7703	403 263 5704	MT-COMPO 0.22U J 50V
C7705	403 020 0409	CERAMIC 27P J 50V
C7706	403 020 0409	CERAMIC 27P J 50V
C7707	403 009 5708	CERAMIC 100P J 50V
C7708	403 068 0409	CERAMIC 0.1U Z 25V
(RESISTOR)		
R7702	401 037 5004	MT-GLAZE 0.000 ZA 1/10W

****

COMPL PCB,MC-1		
COMPL.NO	613 120 9060	
(DIODES)		
D8001	407 094 1300	PHOTO COUPLE SPI-315-04-C
OR	407 043 0101	PHOTO DIODE ON2170-R
(RESISTORS)		
R8001	401 026 0607	CARBON 270 JA 1/6W
OR	401 017 0708	CARBON 270 JA 1/4W
R8002	401 024 6700	CARBON 100 JA 1/6W
OR	401 012 4404	CARBON 100 JA 1/4W
(SWITCH)		
S8001	613 022 4545	SPECIAL SWITCH

****

FLEXIBLE FLAT CABLE

613 153 8627	FLEXIBLE FLAT CABLES CN303-CN811
613 155 6966	FLEXIBLE FLAT CABLES CN301-CN701
613 145 2176	FLEXIBLE FLAT CABLES CN101-CN181

5. MECHANISM

Use this service manual together with the mechanism service technical information of VR182LV, VR194LV and VR204NV (Part No. TP30036) published in 1993.

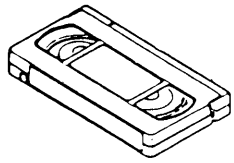
Note: The page number within the parenthesis above each title mentioned later indicates the page number of the service technical information of VR182LV, VR194LV and VR204NV. Replace the page numbers with those in the parenthesis on usage.

[Page 45]

4-1-3. Service Jigs

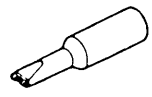
No.	Jig	Jig No.	Remarks
1	Alignment tape	VHJ-0008	SP color bar, 1kHz (normal)
2	Alignment tape	VHJ-0009	SP monoscope, 7kHz (normal)
3	Alignment tape	VHJ-0052	LP monoscope, 3KHz (normal)
4	Eccentric screwdriver	VHJ-0003	For tape path adjustment
5	Nut box	VHJ-0048	For fixed guide removal
6	Torque gauge	VHJ-0004	For reel take-up torque measurement
7	Cassette torquemeter	VHJ-0016	For back tension torque measurement
8	Position adjustment gauge	VHJ-0049	For position adjustment
9	Torque gauge screwdriver	VHJ-0014	For screw fastening torque adjustment
10	3mm dia. bit for torque screwdriver	VHJ-0045	Spare bit for the torque gauge screwdriver
11	Video head removing tool	VHJ-0041	For upper drum removal
12	Cassette stand plate gauge	VHJ-0001	For reel height adjustment
13	Mode selector and 26-pin flexible flat cable (VHJ-0064)	VHJ-0050	For mechanism mode selection and for connecting mode selector
14	26-pin flexible flat cable	VHJ-0064	Spare cable for mode selector
15	Mode selector relay board	VHJ-0103	Relay board for mode selector
16	REV guide lever removing tool	VHJ-0073	REV guide lever removal

VHJ-0008, VHJ-0009, VHJ-0052



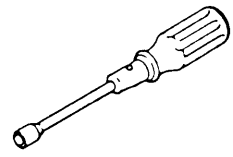
No. 1, 2, 3

VHJ-0003



No. 4

VHJ-0048

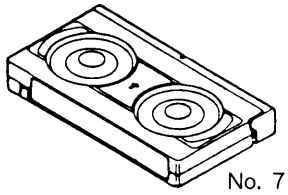


No. 5

VHJ-0004

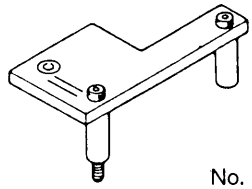
No. 6

VHJ-0016



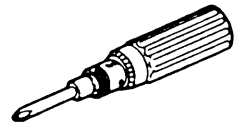
No. 7

VHJ-0049



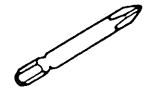
No. 8

VHJ-0014



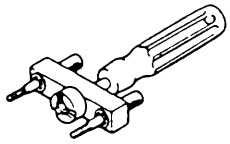
No. 9

VHJ-0045



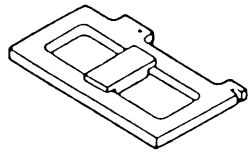
No. 10

VHJ-0041



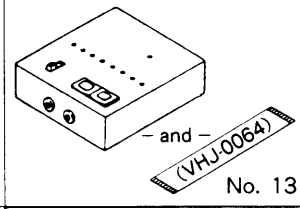
No. 11

VHJ-0001



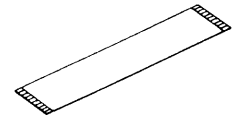
No. 12

VHJ-0050



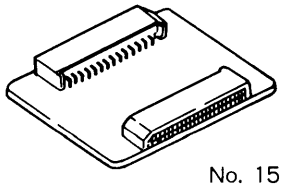
No. 13

VHJ-0064



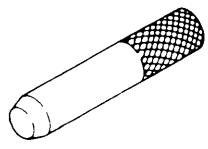
No. 14

VHJ-0103



No. 15

VHJ-0073



No. 16

4-2-3. Connection Method 2 (See Fig. 4-2-2)

Note: The conductor side of the MC-2 board is marked "T-HiFi" in big letters. Use the mode selector relay board (VHJ-0103) only when CN811 is 22-pin.

1) Remove the 22-pin flat cable extending from the COMPL MC-2 board connector (CN811) from the connector of the system control circuit board, and connect it to the 22-pin connector of the mode selector relay board (VHJ-0103).
2) Connect the 26-pin flat cable (VHJ-0064) of the mode selector (VHJ-0050) provided between the mode selector body and the 26-pin connector of the mode selector relay board (VHJ-0103).

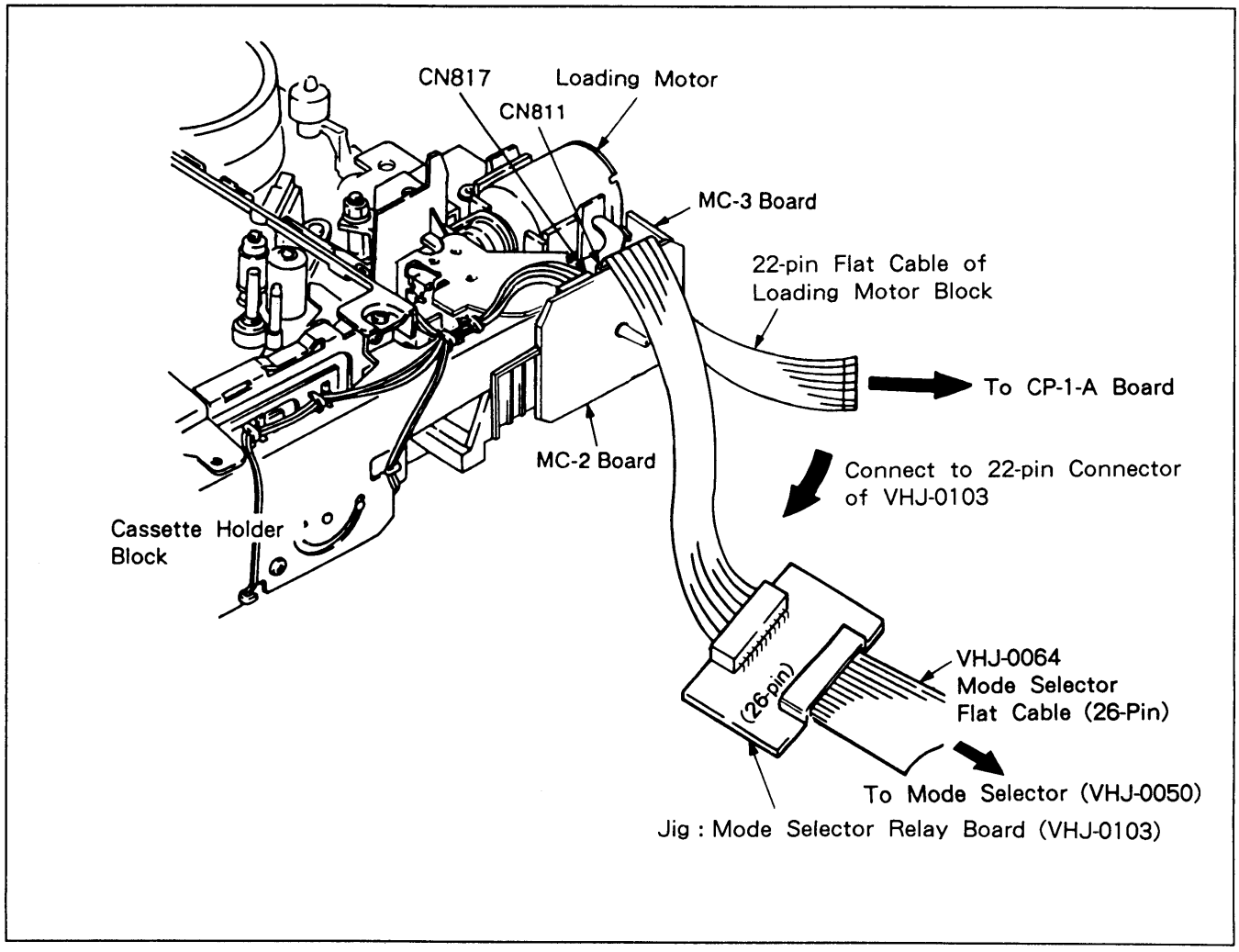


Fig. 4-2-3. Connection

Parts No. TP30050

Parts number for Mechanical Service Manual TP30036

THORN EMI UK Rental Limited
The Park Centre, Arlington Business Park,
Theale, Reading, Berkshire RG7 4SA

May/'94/150 NS

SM 531359

VR202LV

BLOCK DIAGRAMS,CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS

TABLE OF CONTENTS

Page

1. OVERALL WIRING, MECHANISM CONNECTION, & BLOCK DIAGRAMS

OVERALL WIRING 1
MECHANISM CONNECTION 3
VIDEO CIRCUIT 4
SYSTEM CONTROL & SERVO CIRCUIT 7
AUDIO CIRCUIT 10

2. CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS (P.W.B.)

CP-1 P.W.B. 11
CP-1 BOARD (PW-A) POWER SUPPLY 13
CP-1 BOARD (AD-A) AUDIO 14
CP-1 BOARD (VD-A) VIDEO 16
VIDEO CIRCUIT WAVEFORMS 18
VP-1 BOARD VIDEO PRE-AMP 19
VP-1 P.W.B. 19
ON SCREEN (IC162) WAVEFORMS 20
CP-1 BOARD (TN-A) TUNER IF CONNECTION 20
IC301 SYSTEM CONTROL,TIMER, & TUNING CONTROL MPU PIN FUNCTIONS TABLE 22
CP-1 BOARD (SY-A) SYSTEM CONTROL 23
CP-1 BOARD (SV-A) SERVO 25
SERVO CIRCUIT WAVEFORMS 27
TM-1 BOARD DISPLAY (FLD) 28
TM-1 P.W.B. 29
A7001 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE 29
TM-7 BOARD PDC (OPTION BOARD) 30
TM-7 P.W.B. (OPTION BOARD) 30

REFERENCE NO.SM531359

NOTES:

1. All resistance values in "OHMS" unless otherwise noted. (K=1,000 M=1,000,000)
2. All capacitance values in "μfd" unless otherwise noted. p=pico farad
3. All inductance values in "mH" unless otherwise noted. μ=micro henry

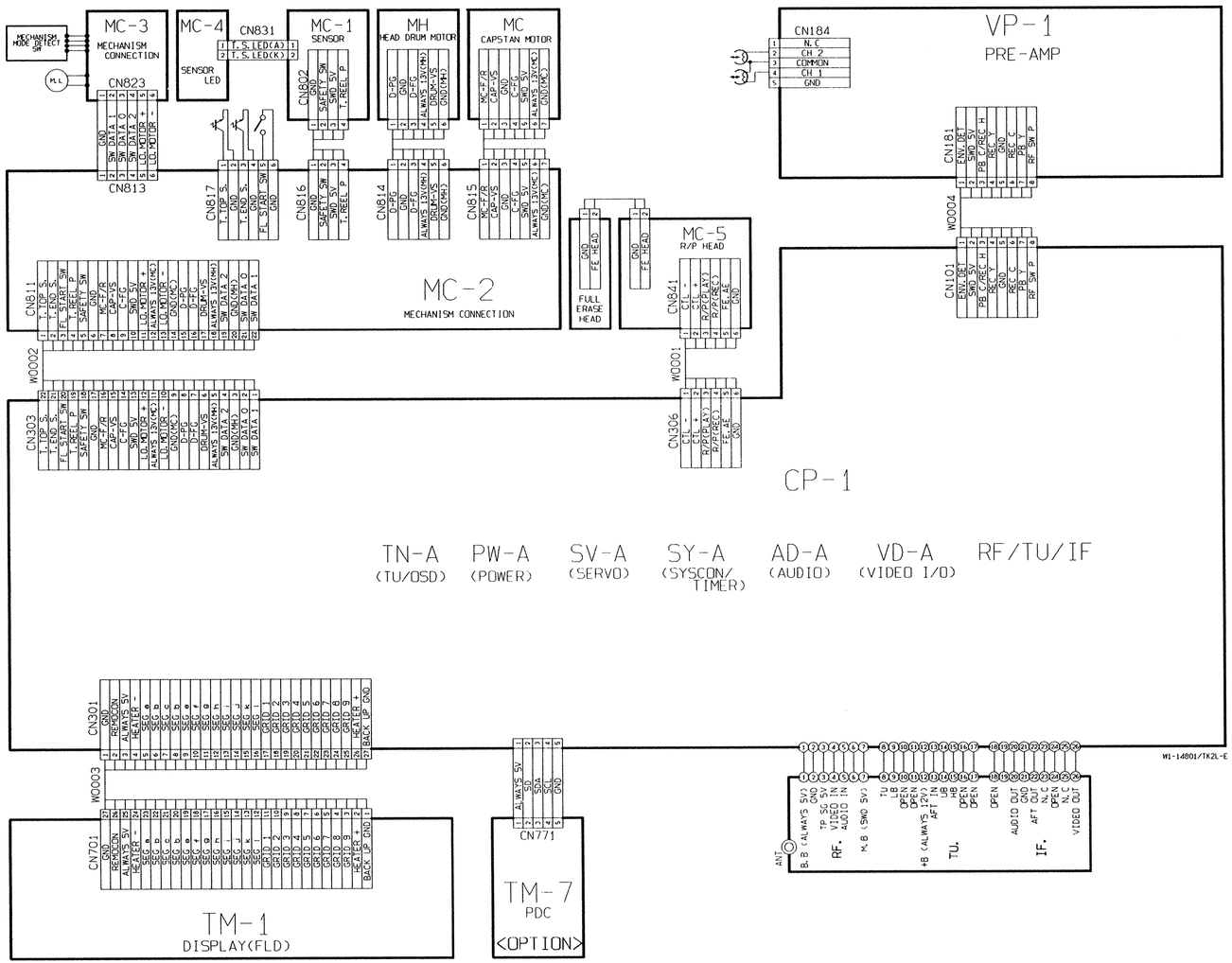
PRODUCT SAFETY NOTICE

THE COMPONENTS DESIGNATED BY A SYMBOL (⚠) IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUE ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. SHOULD ANY COMPONENT DESIGNATED BY A SYMBOL NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST. DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

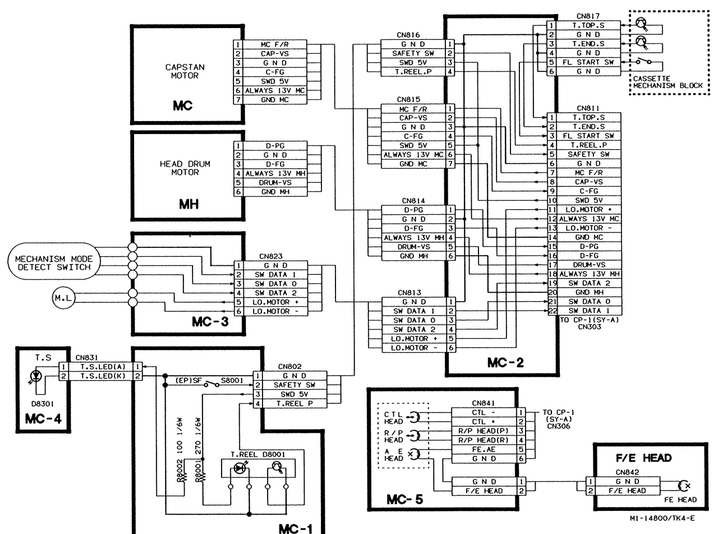
PAL-A

1. OVERALL WIRING,MECHANISM CONNECTION, & BLOCK DIAGRAMS

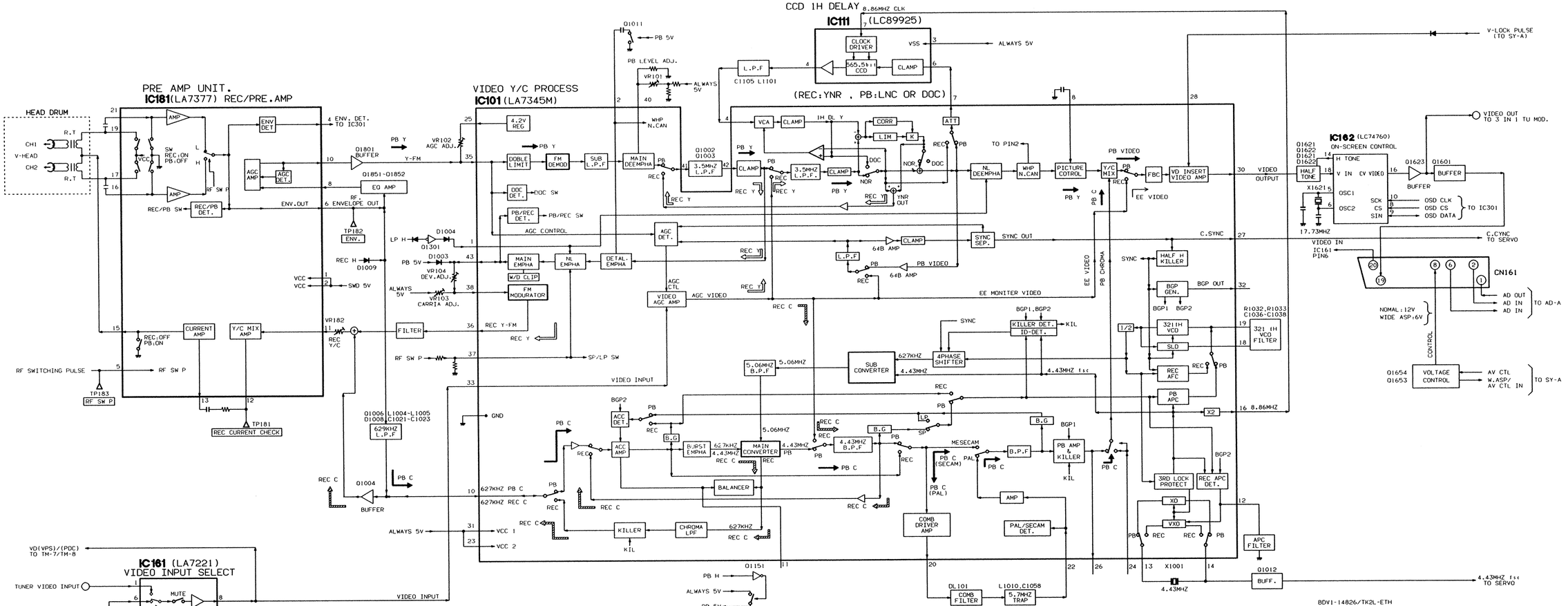
OVERALL WIRING



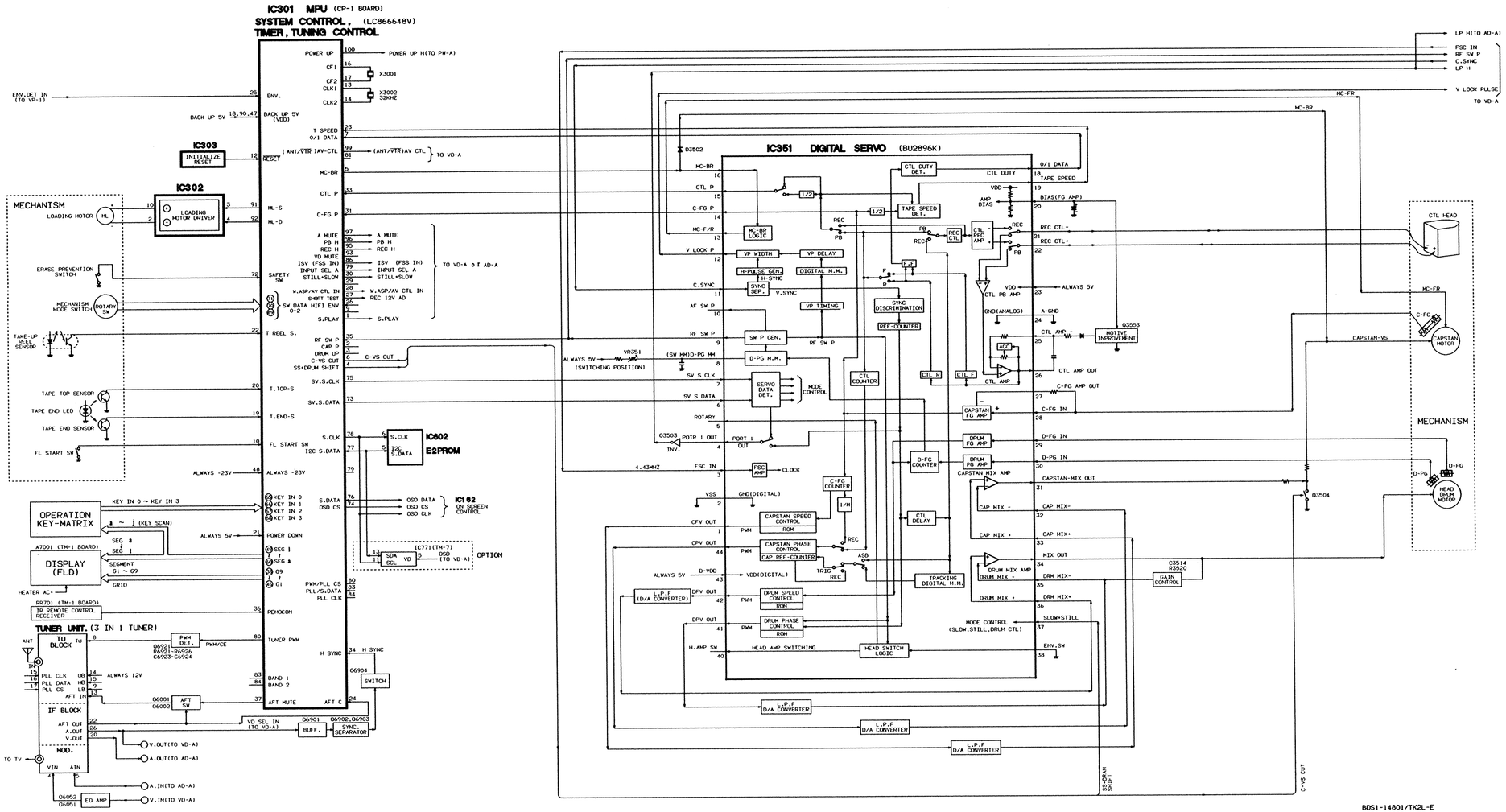
MECHANISM CONNECTION



VIDEO CIRCUIT

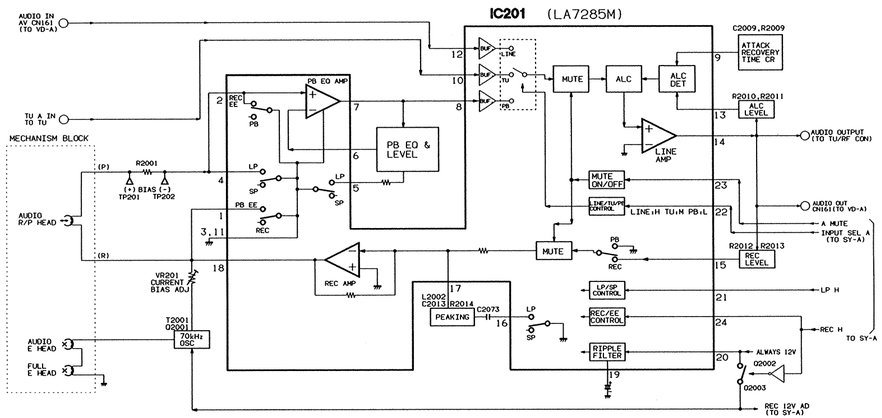


SYSTEM CONTROL & SERVO CIRCUIT

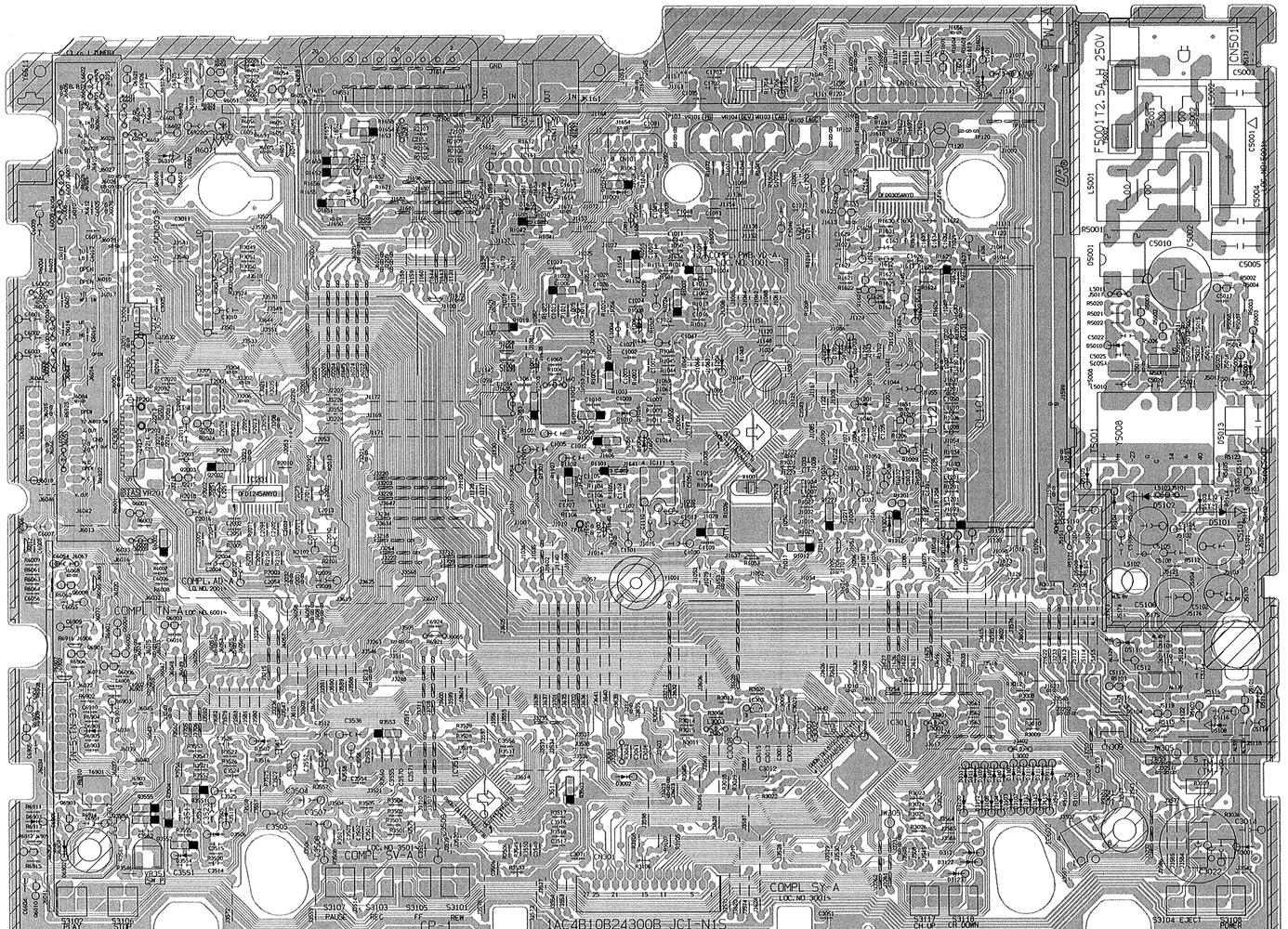


BDS1-14801/TK2L-E

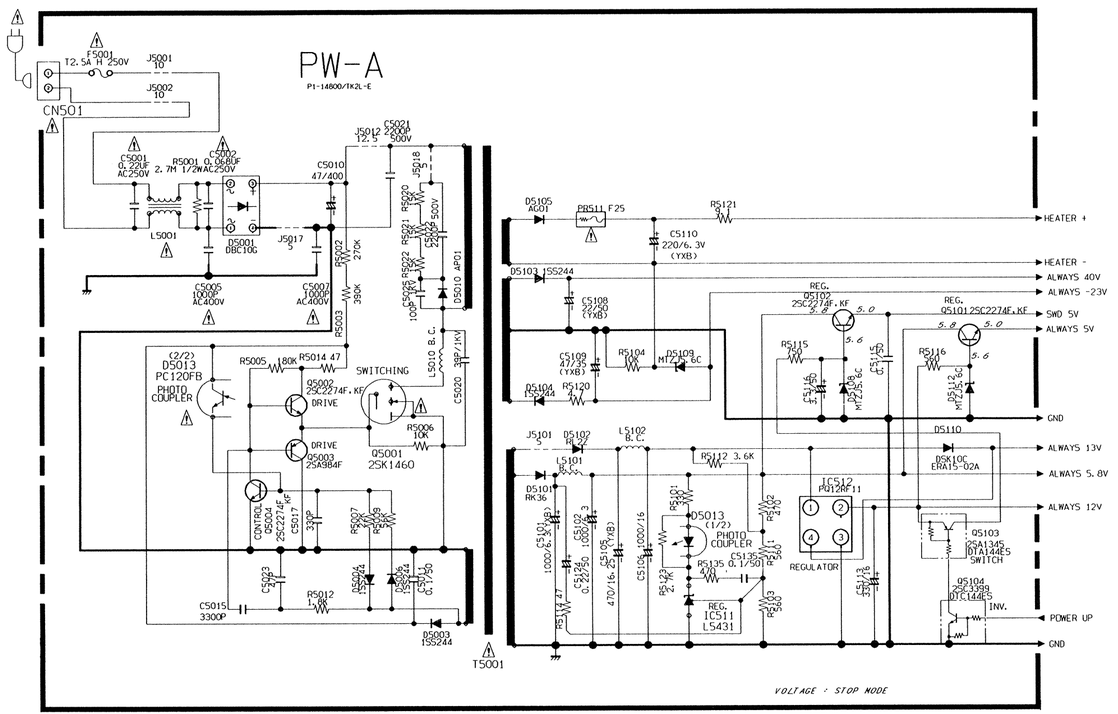
AUDIO CIRCUIT



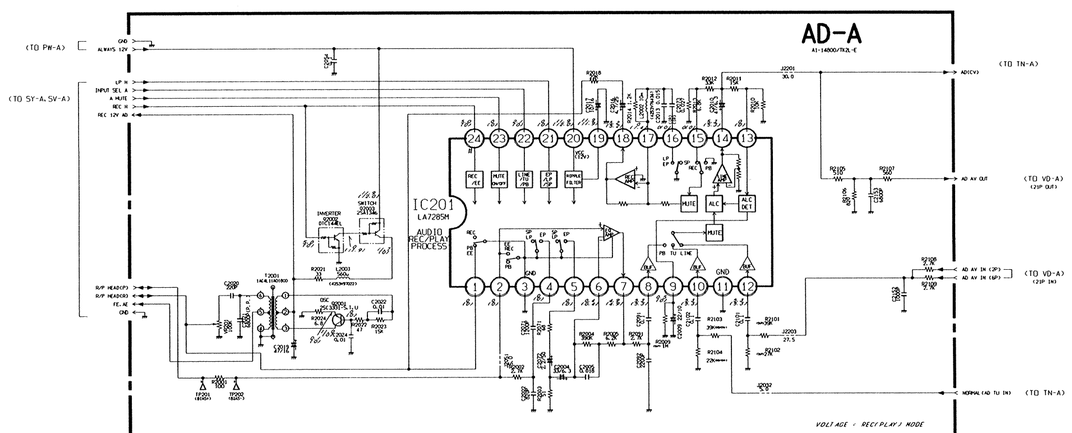
CP-1 P.W.B.



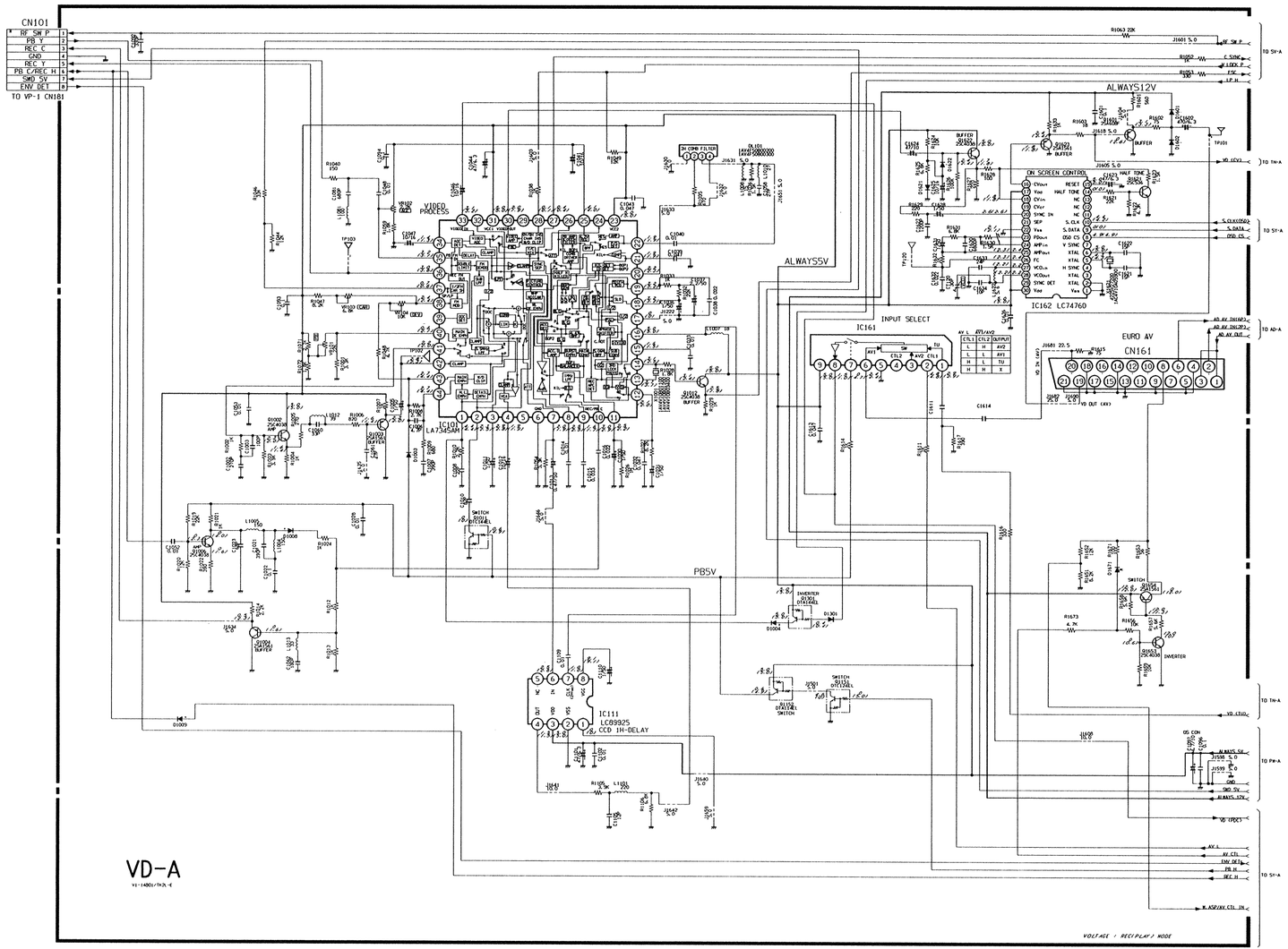
CP-1 BOARD (PW-A) POWER SUPPLY



CP-1 BOARD (AD-A) AUDIO



CP-1 BOARD (VD-A) VIDEO

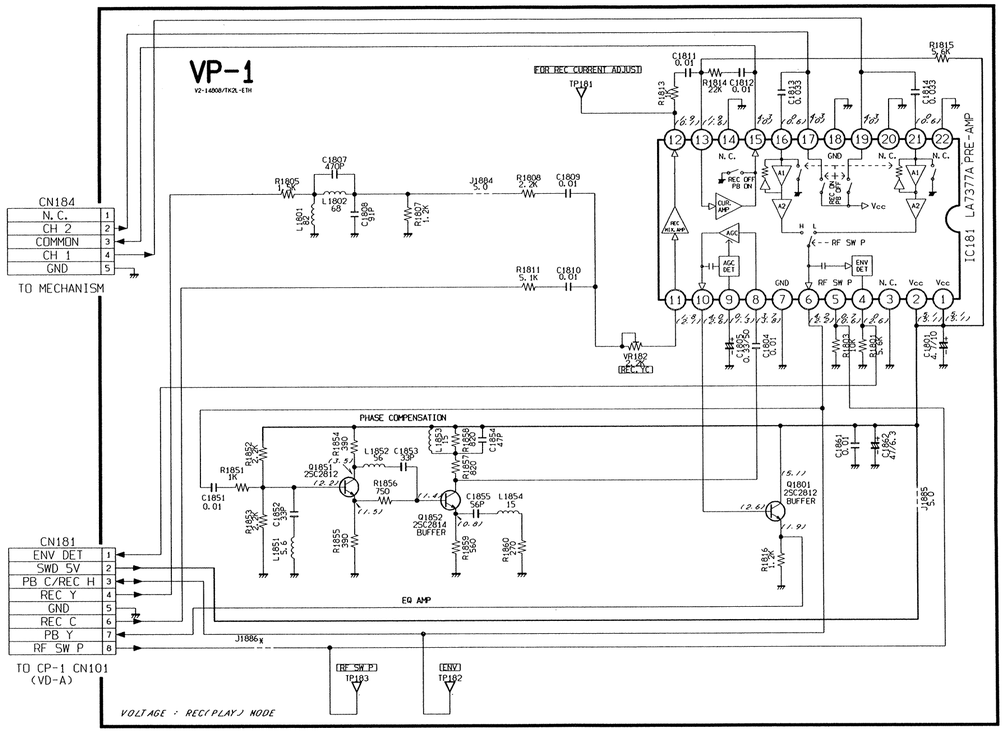


VIDEO CIRCUIT WAVEFORMS

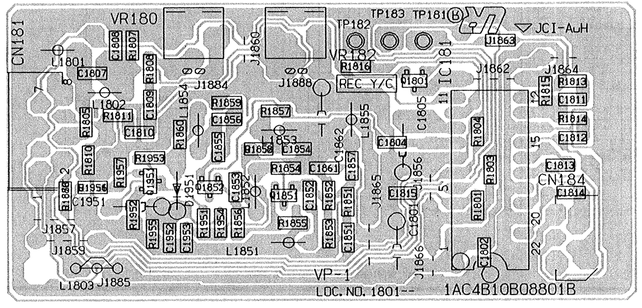
WF-V-TE

TEST LOCATION	WAVEFORM	MODE/LEVEL	TEST LOCATION	WAVEFORM	MODE/LEVEL
IC101 Pin 33 (VIDEO IN)		REC, EE 1 Vp-p	IC101 Pin 30 (VIDEO OUT)		PB 2.5 Vp-p
IC101 Pin 41		REC, EE 0.6 Vp-p	IC101 Pin 30 (VIDEO OUT)		REC, EE 2 Vp-p
IC101 Pin 42		REC, EE 0.5 Vp-p	IC101 (UPPER) Pin 30 (LOWER) Pin 28		STILL (UPPER) 2 Vp-p (LOWER) 5 Vp-p
IC101 Pin 43		REC, EE 1.2 Vp-p	IC101 Pin 10 (REC CHROMA OUT)		REC, EE 0.4 Vp-p
IC101 Pin 36 (REC FM OUT)		REC, EE 1.0 Vp-p	Q1006 Base (PB CHROMA)		PB 0.3 Vp-p
IC101 Pin 35 (PB FM IN)		PB 0.3 Vp-p	IC101 Pin 10 (PB CHROMA IN)		PB 0.2 Vp-p
IC101 Pin 41		PB 0.5 Vp-p	IC101 Pin 20		PB 1.0 Vp-p
IC101 Pin 42		PB 0.5 Vp-p	IC101 Pin 26		PB 0.6 Vp-p
IC101 Pin 7/4		PB 0.3 Vp-p			

VP-1 BOARD VIDEO PRE-AMP



VP-1 P.W.B.



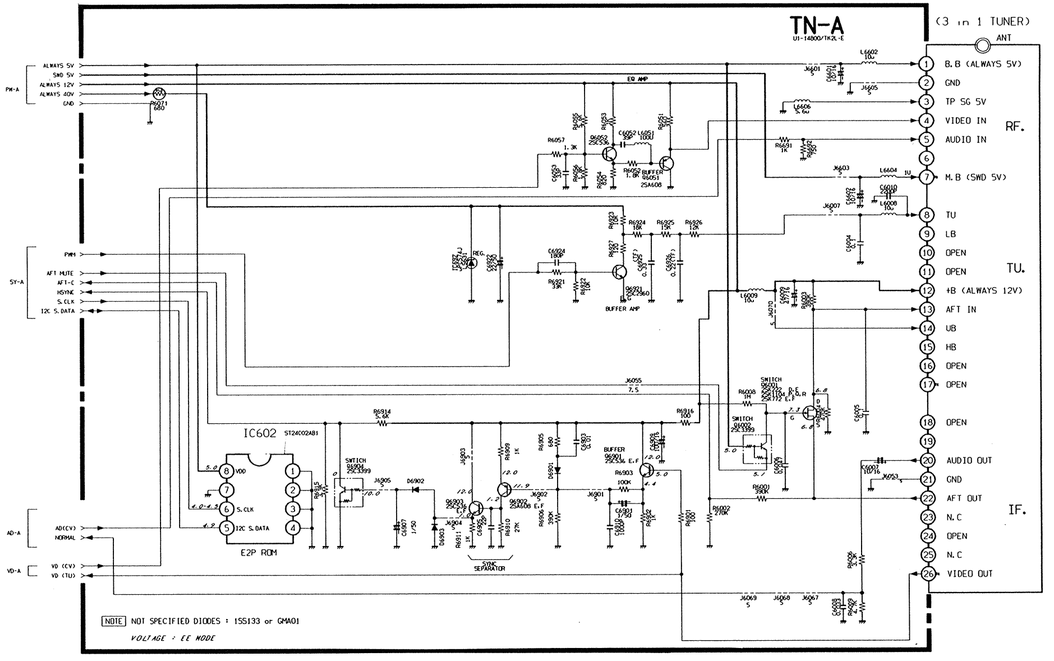
ON SCREEN (IC162) WAVEFORMS

(MODE: REC EE/ON SCREEN)

TEST LOCATION	WAVEFORM	LEVEL	TEST LOCATION	WAVEFORM	LEVEL
Pin 5 (17.7MHz X-TAL)		2Vp-p	Pin 19 (CV cr)		2Vp-p
Pin 6 (17.7MHz X-TAL)		3Vp-p			
Pin 14 (HALF TONE)		5Vp-p	Pin 20 (SYNC IN)		2Vp-p
Pin 16 (VIDEO OUT: WITH ON SCREEN)		2Vp-p			
Pin 14 (HALF TONE)		5Vp-p	Pin 23 (PD OUT)		4.5Vp-p
Pin 18 (VIDEO IN)		2Vp-p	Pin 16 (VIDEO OUT)		2Vp-p

WF-UFO-TP4

CP-1 BOARD (TN-A) TUNER IF CONNECTION



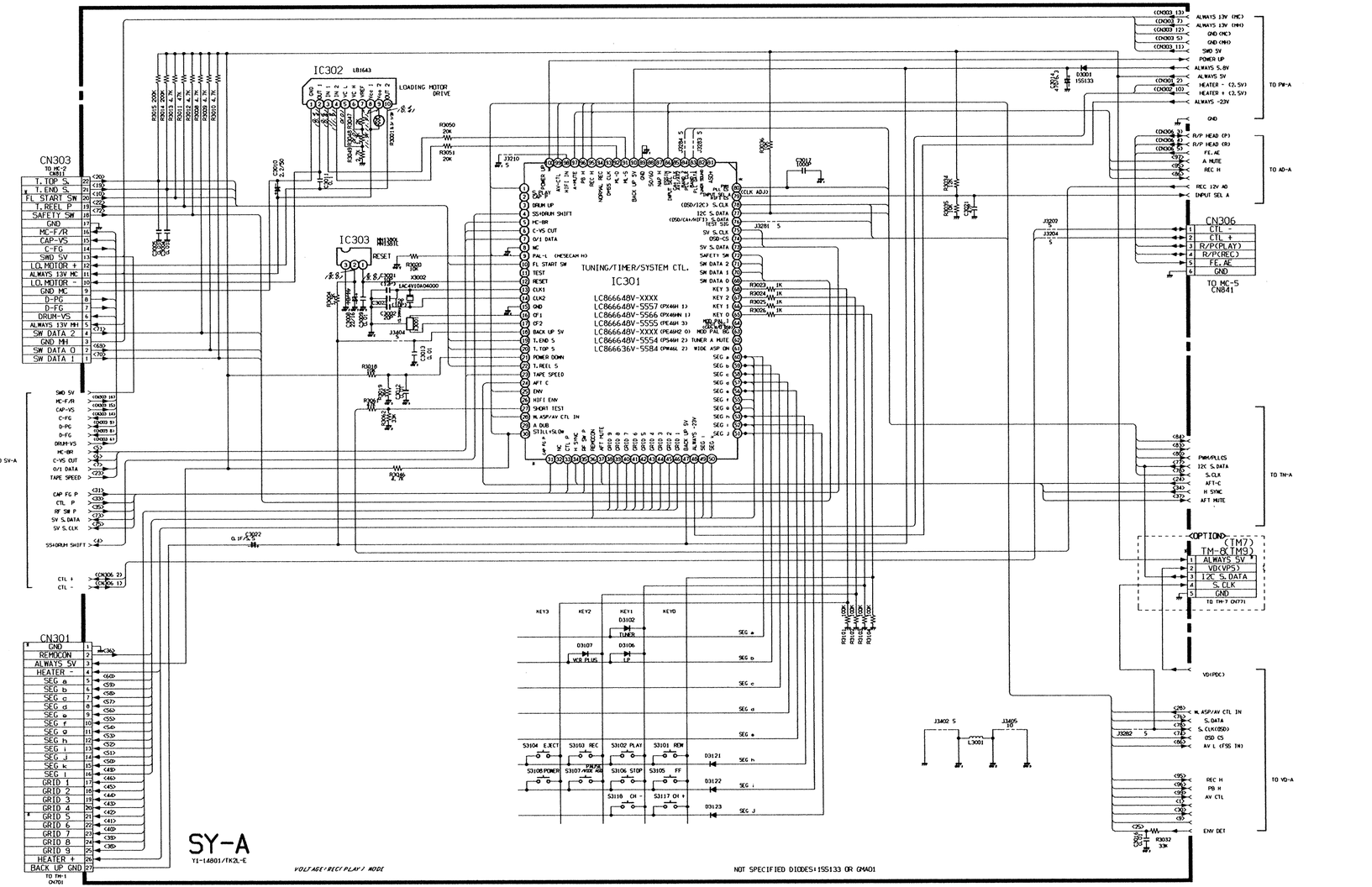
IC301 SYSTEM CONTROL,TIMER, & TUNING CONTROL MPU PIN FUNCTIONS TABLE

No.	Name	I/O	I/O Signal Function
1	S - PLAY	O	Signal for indicating CUE , REV , STILL and SLOW modes.
2	CAP P.	O	Gain down control for Head Motor Amplifier at SLOW mode.
3	DRUM UP	O	Head drum motor rotation speed up signal.
4	SS + DRUM SHIFT	O	Signal for indicating SLOW/STILL modes and alternation of drum motor control data. (3 value voltage)
5	MC - BR	O	Brake signal for capstan motor.
6	C - Vs CUT	O	Cut off for capstan motor control voltage in SLOW / STILL modes.
7	0 / 1 DATA	I	CTL pulse duty detection signal input. Used for VISS detection.
8	-	-	-
9	PAL- L(MESECAM H)	I	Color system indication signal input.
10	FL- START SW	I	Switch input indicating start of cassette loading or discharge by cassette mechanism.
11	-	-	-
12	RESET	I	Initial reset terminal for this IC.
13	CLK 1	-	Clock OSC during power failures.
14	CLK 2	-	Frequency is 32.768kHz.
15	VSS	-	Ground terminal
16	CF 1	-	IC clock OSC terminal.
17	CF 2	-	Frequency is 13.31MHz.
18	VDD	-	IC power supply terminal.(5Vdc)
19	T. END S.	I	Sensor signal input for tape end detection.
20	T. TOP S.	I	Sensor signal input for tape beginning detection.
21	POWER DOWN	I	Power failure detection terminal.
22	T. REEL S.	I	Pulse input for detection of take-up reel table rotation.
23	TAPE SPEED	I	Input of result of tape speed discrimination by digital servo IC.
24	AFT - C	I	Tuner AFT S-curve signal input for tuner AFT control.
25	ENV.	I	Video head envelope detection signal input for ATR function.
26	HIFI ENV.	I	Hi-Fi audio head envelope detection signal input for ATR function. (Hi-Fi model only)
27	SHORT TEST	I	REC mode indication signal input (REC 5V).
28	W. ASP/ AV CTL IN	I	AV source selection signal input from AV terminal.
29	A DUB	O	Signal for indicating audio dubbing mode.
30	STILL + SLOW	O	STILL or SLOW modes indication signal output.
31	C - FG P.	I	FG signal input of capstan motor.
32	-	-	-
33	CTL P.	I	CTL head recording / playback pulse signal input.
34	H SYNC	I	Sync. signal input for existing channel discrimination and TV system discrimination.
35	RF SW P.	I	RF switching pulse input, created by head drum PG.
36	REMOCON	I	Remote control signal input.
37	AFT MUTE	O	"H" output during TU AFT mute. (V-syn model only)
38	G9	O	
39	G8	O	
40	G7	O	
41	G6	O	
42	G5	O	Display grid outputs (FLD).
43	G4	O	
44	G3	O	
45	G2	O	
46	G1	O	
47	VDD	-	IC power supply input.(5Vdc)
48	V LOAD	O	-23V input for FLD drive.
49	SEG i	O	
50	SEG k	O	
51	SEG j	O	Display segment outputs (FLD).
52	SEG i	O	(Includes key-scan output)
53	SEG h	O	
54	SEG g	O	

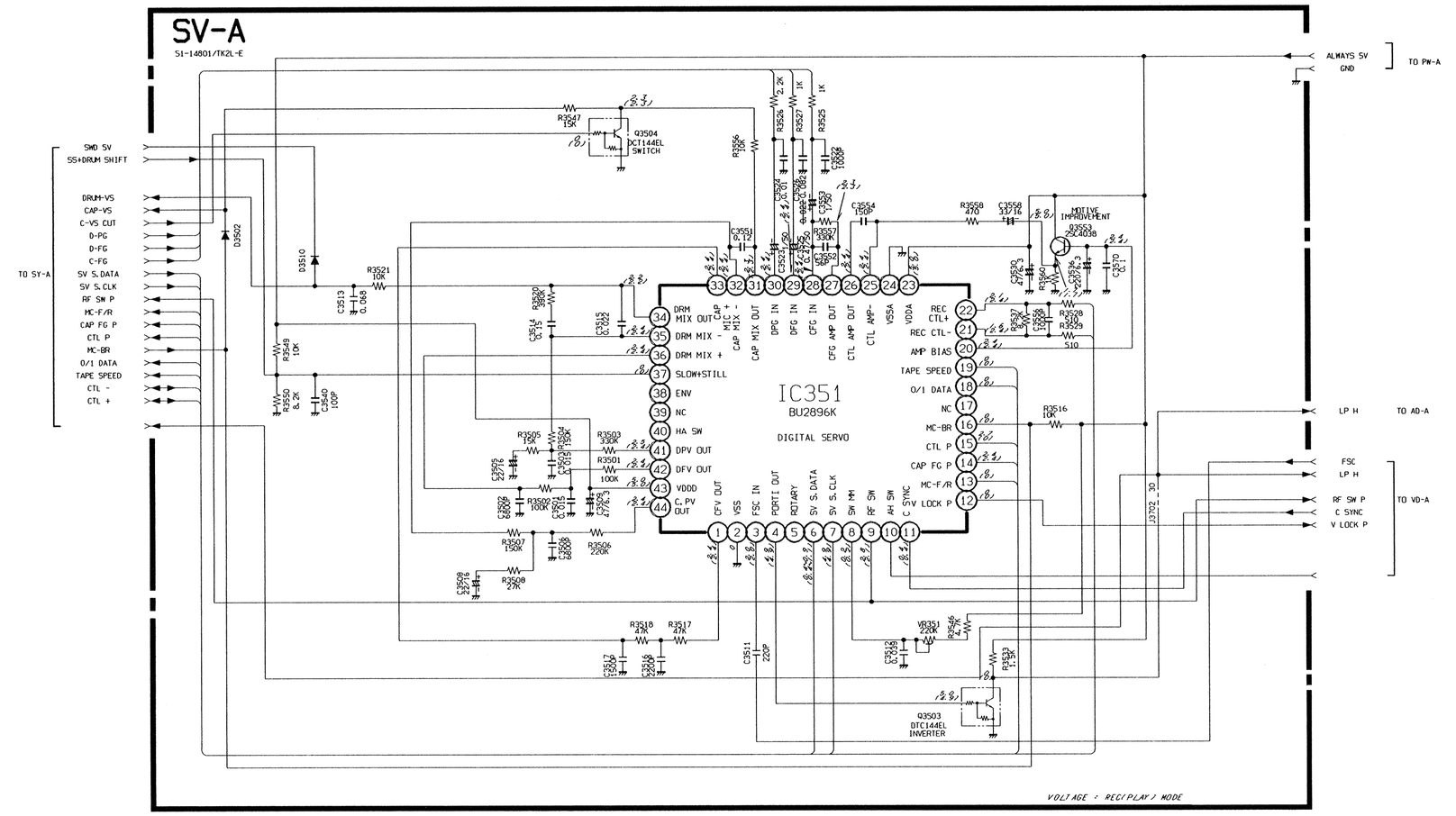
No.	Name	I/O	I/O Signal Function
55	SEG f	O	
56	SEG e	O	
57	SEG d	O	Display segment outputs (FLD).
58	SEG c	O	(Includes key-scan output)
59	SEG b	O	
60	SEG a	O	
61	WIDE ASP ON	O	Signal for wide aspect TV-system indication.
62	TUNER A MUTE	O	Signal for disable tuner-audio output.
63	RF PAL BG	O	Signal for RF output TV-system setting (PAL - BG).
64	RF PAL I	O	Signal for RF output TV-system setting (PAL - I).
65	KEY IN 0	I	Operation key data inputs.
66	KEY IN 1	I	
67	KEY IN 2	I	
68	KEY IN 3	I	
69	SW DATA 0	I	3-bit data indicating operation position of mechanism.
70	SW DATA 1	I	
71	SW DATA 2	I	
72	SAFETY SW	I	Terminal for accidental erasure prevention switch. No operation to record mode while "HIGH" is input.
73	SV S. DATA	O	Output 8-bit X 4 serial data giving operation mode and tracking data,etc., to digital servo IC.
74	OSD CS	O	Chip enable (access) signal output to OSD IC.
75	SV S. CLK	O	The clock pulse for digital servo IC.
76	S. DATA (OSD / CH+ / Hi-Fi)	I/O	Terminal for communication of respective data with OSD IC, CH+ control IC, and Hi-Fi audio IC.
77	I2C S.DATA	I/O	Data exchange with tuning memory IC and VPS IC.
78	S. CLK (OSD/I2C)	O	The clock pulse for OSD IC and tuning memory IC.
79	INPUT SEL A	O	Signal for selecting audio input source.
	HIFI CS	O	Chip enable (access) signal to Hi-Fi audio IC.
80	PLL CS	O	Chip enable signal output to tuner PLL tuning system IC. (F-syn model)
	TU PWM	O	Tuning voltage output (PWM signal). (V-syn model)
81	-	-	-
82	TU SOUND (I/BG)	O	TV system indication signal output (PAL I or BG).
83	BAND 1	O	Tuning band data(BAND 1 and 2 ; for V-syn model).
	PLL DATA	O	Data exchange with tuner PLL IC (for F-syn model).
84	BAND 2	O	BAND 1 and 2 ; (L,L)=VHF-LOW (L,H)=VHF-HIGH (H,L)=UHF (H,H)=SKIP. (for V-syn model)
	PLL CLK	O	The clock for PLL IC of tuner unit (for F-eyn model).
85	CH+ CLK	O	The clock for CH+ input/output source selection IC.
	AV1 / AV2	O	Signal for selecting AV-input (video/audio) source.
86	INPUT SEL V	O	Signal for selecting video input source.
	FSS IN	I	CH+ mode control signal input (CH+ model).
87	NAP H	O	" H " output during NTSC (NAP) playback mode.
88	50 / 60	O	" LOW " output during NTSC (NAP) mode. (60 field mode)
89	VSS	-	IC ground terminal.
90	VDD	-	IC power supply input.(5Vdc)
91	ML- S	O	Loading motor rotation speed (low / medium / high) indication signal.
92	ML- D	O	Loading motor rotation direction (FWD / REV) indication signal.
93	-	-	-
94	NORMAL AD REC	O	Signal for indicating normal audio recording.
95	REC H	O	Signal for indicating recording mode.
96	PB H	O	Signal for indicating playback mode.
97	A MUTE	O	"H" output for disable audio output signal.
98	HIFI IN	I	Hi-Fi mode indication signal input from audio IC.
99	AV CTL	O	AV terminal (pin8 of 21pins AV socket) control signal output.
	ANT / VTR	O	Selection the RF source of ANTENNA or VTR.
100	POWER UP	O	"HIGH" output except when power is off. Indicating that power is ON.

TK14HTTS-A

CP-1 BOARD (SY-A) SYSTEM CONTROL



CP-1 BOARD (SV-A) SERVO

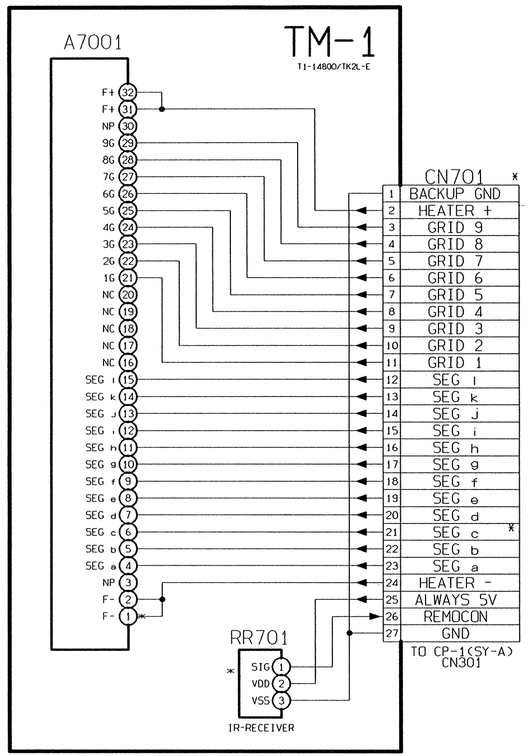


SERVO CIRCUIT WAVEFORMS (IC351:BU2896 Series)

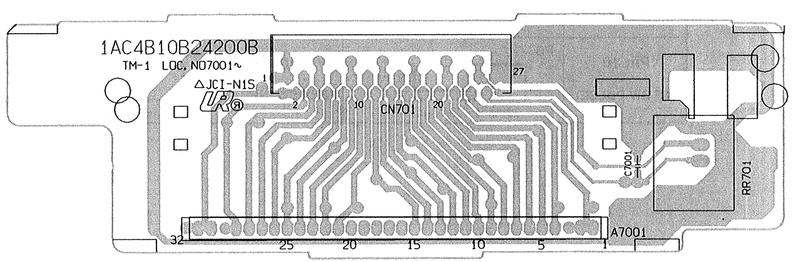
TEST LOCATION	WAVEFORM & MODE/LEVEL	TEST LOCATION	WAVEFORM & MODE/LEVEL
Pin 40 (H.A.SWITCHING)	SLOW PB, 5.0V, 20msec 20msec	**Pin 11** (COMPOSITE SYNC INPUT)	T=20msec, 4.2V
Pin 42 (PWM)	5.0V, 8.66KHz	**Pin 14** (C-FG PULSE)	5.0V, 1513Hz
Pin 41,44,1 (PWM)	5.0V, 69.27KHz	**Pin 15** (CTL PULSE)	PB, 850µsec, 5.0V, 40msec
Pin 3 (FSC INPUT)	0.3Vp-p, 4.43MHz	**Pin 26** (CTL AMP OUT)	PB, 2.0Vp-p, 40msec
Pin 5 (ROTARY)	PB, 5.0V, 20msec 20msec	**Pin 28** (C-FG INPUT)	10mVp-p, 0.66msec
Pin 8 (D-PG MM)	2msec, 2.5V, 7msec	**Pin 29** (D-FG INPUT)	30mVp-p, 1.33msec
Pin 9 (RF SW PULSE)	5.0V, 20msec 20msec	**Pin 30** (D-PG INPUT)	250mVp-p, 40msec
Pin 10 (AF SW PULSE)	PB, 5.0V, 20msec 20msec	**Pin 38** (ENV.SW INPUT)	SLOW PB, 4.0V, 20msec 20msec

WF-S-CE6

TM-1 BOARD DISPLAY (FLD)

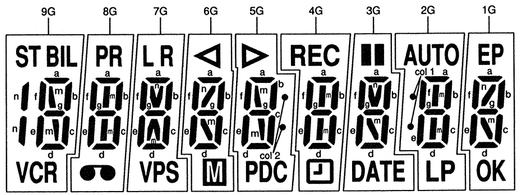


TM-1 P.W.B.



A7001 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE

GRID & SEGMENT ASSIGNMENT

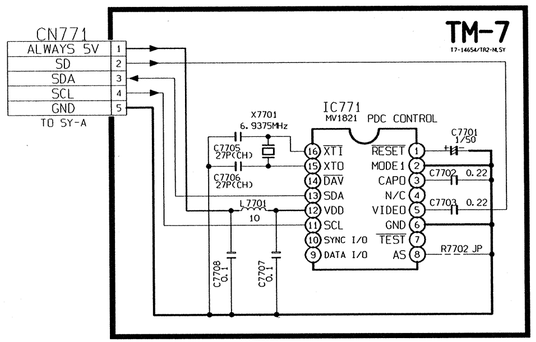


ANODE CONNECTION

GRID / SEGMENT	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	ST	PR	L	◁	▷	REC	▮▮	AUTO	EP
b	n	—	n	n	—	—	n	—	n
c	a	a	a	a	a	a	a	a	a
d	b	b	b	b	b	b	b	b	b
e	c	c	c	c	c	c	c	c	c
f	d	d	d	d	d	d	d	d	d
g	e	e	e	e	e	e	e	e	e
h	f	f	f	f	f	f	f	f	f
i	g	g	g	g	g	g	g	g	g
j	m	m	m	m	m	m	m	m	m
k	BIL	—	VPS	—	col 2	—	—	col 1	—
l	VCR	🎞	R	M	PDC	↵	DATE	LP	OK

GR-00800

TM-7 BOARD PDC (OPTION BOARD)



TM-7 P.W.B. (OPTION BOARD)